The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXI, No. 11 CHICAGO, ILLINOIS SEPTEMBER 13, 1913

CHRONIC FOCAL INFECTION AS A CAUSATIVE FACTOR IN CHRONIC ARTHRITIS *

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I presented a paper[1] on this subject in January, 1912. The study of the subject has been vigorously carried on since that date. Altogether seventy patients suffering from arthritis deformans have been investigated and treated in the Presbyterian Hospital under the auspices of the Otho S. A. Sprague Institute and the Dane Billings Memorial Fellowship in the Department of Medicine of Rush Medical College.

This clinical research has confirmed the principles announced in the first paper. It has been found that the focal disease was usually located in the head. Most frequently this was a chronic streptococcus focus of the faucial tonsils; but chronic alveolar abscess and chronic sinusitis due to streptococcus infection were an occasional cause. In monarticular osteo-arthritis of the hip especially, chronic hypertrophic prostatitis with residual urine, chronic cystitis and infection with the colon bacillus seemed to be an etiologic factor. There can be no question that chronic gonorrheal infection of the seminal vesicles may cause systemic disease, especially arthritis. Streptococcus infection of the seminal vesicles may also cause systemic infection and especially arthritis deformans.

In this work the chronic focus of infection has been located in the faucial tonsils, dental alveoli or jaw, the antra of the head and in the seminal vesicles and prostate gland.

Rationally one may find the septic focus in any circumscribed streptococcus abscess, possibly a chronic appendicitis, chronic cholecystitis, etc.

The patients who were the subjects of this investigation were from the various walks of life. All were adults. Three patients over 50 years of age suffered from monarticular osteo-arthritis of the hip (morbus coxae senilis). All of the remainder presented the three prevailing types of chronic arthritis with deformities; that is, the so-called proliferative or hypertrophic; the degenerative or atrophic; and the spondylitis deformans type.

The study of these patients shows that an individual who suffers from what may be called a true arthritis deformans presents not only an arthritis (periarthritis, synovitis or osteo-arthritis may be present in different joints of the same patient), but also a chronic myositis which is more or less selective. The muscles most often involved are the biceps humeri, the masseters, the erector spinae, the anterior tibial group and the hamstring muscles. This is a chronic not very painful myositis which causes shortening of the muscular fibers. Hence the inability of most of these patients to extend the forearm fully. Many cannot fully open the mouth because of the contracted masseter muscles. Some rigid spines are due to muscular contraction and rigidity and not to involvement of the joints of the vertebrae.

Most of these patients present evidence of chronic neuritis or perineuritis of single or multiple nerves, at some time in the course of the disease.

Practically all of these patients suffer from general debility; anemia of various degrees, loss of weight, lessened strength and endurance, and functional nervous disorders. Long suffering intensifies the perception of pain and other discomforts.

There can also be no question that a faulty metabolism modifies the whole morbid process. If one considers the results of the treatment carried out in this investigation, it would seem that the faulty metabolism is not a primary factor etiologically. Nevertheless, it is an important factor in the progress of the disease and also in its treatment.

The severe trophic disturbances which occur in the joints (cartilage, bone, etc.), the appendages of the skin (nails, hair, sweat-glands), are difficult to explain. One does not find cerebrospinal or peripheral nerve lesions to account for these changes as in tabes dorsalis (Charcot joint) or other neuropathic conditions. Probably the primary cause is the tissue reaction to the bacterial toxin, and this specifically excites a proliferative or degenerative local metabolism with the characteristic morbid anatomy. In the experimental inoculation of rabbits with a strain of streptococcus obtained from arthritis patients by Dr. D. J. Davis[2] and Dr. Leila Jackson,[3] non-suppurative, proliferative and degenerative joint lesions were produced. From the joint tissues the same organism was recovered. There is, therefore, a strain of the streptococcus which will specifically produce in the inoculated rabbit morbid anatomic lesions, which resemble the morbid joint changes in arthritis deformans in man.

The method of procedure in this investigation was the same as that described in the former paper. From each patient a most thorough clinical history was obtained. A careful general and special examination was made. When necessary clinical aid was obtained from throat specialists, urologists and other special

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

* From the Otho S. A. Sprague Memorial Institute, the Clinical Department of Rush Medical College and the Presbyterian Hospital, Chicago.

1. Billings, Frank: Chronic Focal Infections and Their Etiologic Relations to Arthritis and Nephritis, Arch. Int. Med., April, 1912, p. 484.

2. Davis, David J.: Bacteriologic and Experimental Observations on Focal Infections, Arch. Int. Med., April, 1912, p. 505.

3. Jackson, Leila: Experimental Streptococcal Arthritis in Rabbits, Jour. Infect. Dis., 1913, xii, 364.

experts. When found the focal infection was removed surgically or otherwise. Plate-cultures of the material were made from the abscesses or exudate of the operated tissues. Subcultures were made from the dominant bacterial colonies of the plates. The opsonic and phagocytic indexes of the blood of the patient with the dominant bacteria were studied before and after autogenous vaccination at intervals of one week. Rabbits were inoculated with the living bacteria, and the results studied on the animal living and dead.

These bacterial studies have revealed some notable results. The dominant organism found in abscesses and sealed crypts of the faucial tonsil are *Streptococcus viridans* and *Streptococcus hemolyticus* (*pyogenes*). The *S. viridans* is usually a surface growth, while the *S. hemolyticus* is frequently found in pure culture in the deeper infected tissues. In acute rheumatism the bacteria obtained from joint exudate and from rheumatic nodes have been studied by Dr. Edward C. Rosenow, fellow of the Memorial Institute for Infectious Diseases, cooperating with us. He has found that organisms from rheumatism appear to occupy a position between *S. viridans* and *S. hemolyticus*. They are more virulent than the former and less virulent than the latter. Three types of organisms have been isolated from rheumatism. One type produces green on blood-agar and forms very long chains. The second type produces a narrow zone of hemolysis on blood-agar from the beginning or after several generations and forms short chains. The third type produces a grayish-brown colony without affecting perceptibly the blood in the media and appears as a diplococcus in short chains and as single cocci. By varying the condition of growth, these types may be changed quite readily, one into the other. The most distinctive cultural features are their production of a very high acid reaction in dextrose broth and abundant growth at a low temperature. They are more virulent to warm-blooded animals than *S. viridans*, but less virulent than *S. hemolyticus* and, of course, the pneumococcus. To frogs at 22 C. (71.6 F.) the virulence of the rheumatism strains is, however, greater than both the *S. hemolyticus* and the pneumococcus; but if the frogs are kept at 37 C. (98.6 F.) the order of virulence is the same as in warm-blooded animals.

The cultural features are not so distinctive as the pathogenic properties. The results following injection in animals are quite different from those following injection of *S. viridans*, *S. hemolyticus* and even mixtures of these two strains. It is common to produce by intravenous injection in rabbits, multiple non-suppurative arthritis, endocarditis, myocarditis and pericarditis in the same animal. By modifying these strains by varying culture methods, their affinity for joints, endocardium and pericardium becomes less and the affinity for the muscles, myocardium and kidney much greater, producing now a non-suppurative myositis. The largest number of these lesions is found in the flat muscles of the neck, shoulders and spine, the intercostal muscles and the more tendinous portions of the muscles of the extremities. Three of the strains from rheumatism have been converted into typical pneumococci. Reverse transmutations may be made from the pneumococcus to the various cultural characteristics (green, gray and hemolysis producing streptococci) by varying the culture mediums, oxygen tension, etc. The strains of streptococci studied from various patients are undoubtedly the same as those described by Poynton and Payne and Beattie as the *Micrococcus rheumaticus*. The results of the clinical studies and animal experimentation by Poynton, Payne, Walker, Beattie, Yates, Cole and others have been of great value in establishing the cause of acute articular rheumatism. Confusion has existed in the minds of many because the organisms described by the different investigators did not coincide.

The results of the work of Rosenow seem to adjust the differences, for his experiments show that the same organisms may be changed by cultural methods so that they may in mediums show progressive phases of transmutation. The range of transmutation is from a type of streptococcus to the pneumococcus. Furthermore, at different stages of the transmutation he has, at will, produced in the inoculated rabbit, suppurative arthritis, or at another phase multiple proliferating arthritis, endocarditis, pericarditis and myocarditis, or at another phase myositis of some of the general skeletal muscles, at another phase, a virulent type which produces arthritis with proliferative and degenerative joint lesions, and at another phase typical pneumonia. These experiments probably clear up this difference in results and the varying types of streptococci described by many investigators.

Many investigators have searched for the source of the infectious organisms of chronic arthritis in the alimentary tract. Strains of streptococci isolated from the feces have been used as vaccines in the treatment of chronic arthritis. We have not experimented with the intestinal flora in this investigation.

In the treatment of these patients we have carried out the following plan:

1. All possible sources of focal infection have been removed. Tonsillectomy; oral surgery for alveolar abscesses (roentgenography will show jaw disease); drainage or other measures to cure sinusitis; vasectomy to drain and to use the vas deferens to wash out infected seminal vesicles and to drain the prostate gland, and any other measures necessary to surely remove all possible streptococcus foci of infection have been made use of.

2. The patient's immunity to the infectious organism has been improved by:

(*a*) Absolute rest for an indefinite period. This may be absolute or partial recumbency dependent on the individual and the character of the disease.

(*b*) Improvement of the general and individual hygiene. The patient needs good air, sunshine, good wholesome food with plenty of proteins to replace wasted tissue, restorative tonics when required, plenty of fluid drink and the necessary laxatives. Fatigue must be avoided. Gentle superficial massage may be used, but in the beginning never to the degree of causing pain and fatigue. A cheerful environment and constant moral support are essential to all of these patients who are despondent because of long suffering. Many of them are pessimistic of hopeful results of treatment because baths, superheated-air treatments, massage, osteopathy and drugs have not only failed, but have made the disease worse. These measures modified to meet individual peculiarities will usually improve the general condition, and the immunity to the infectious organism is increased as shown by the steady improvement in the condition of the joints. Indeed, it is my opinion that these measures alone will stop the further progress of the disease, and usually entire recovery will take place; but for some patients this will require a long period of treatment.

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(c) Autogenous vaccinations with the strains of streptococci isolated in each patient. This practice has been followed in practically all of the patients. Immunologic study of the blood has been made coincidently. As a rule the opsonic index and also the phagocytic index have been increased by these vaccines.

Many of the patients investigated had been ill for months or years. Some of them had received vaccinations of commercial vaccines, single and mixed, and during the past year several had received repeated injections of Rheumo-Phylacogen. As far as could be learned, these treatments were instituted without any investigation of the patient's condition, and without a diagnosis of the infectious micro-organism. Not one of them had received benefit from the vaccines of any kind. Many of them were apparently made worse.

There is a value in vaccine therapy, but to obtain benefit from vaccines, they should be rationally used. To use vaccines, simple or mixed, in the treatment of a patient, without first ascertaining the nature of the disease, and if infectious, the kind of invading organism, is unscientific, reprehensible and wrong. When the mixed vaccines or the filtrate of culture-broth of countless organisms are used, it is like the shotgun prescription of our ancestors of the profession. They were and are intended to hit something. There is this difference between the old and the new shotgun: The abused stomach could reject the old shotgun mixture; the new shotgun mixture is injected subcutaneously or intravenously, and the patient cannot escape it. It is my opinion that vaccine therapy irrationally used and the injection of so-called serums made from culture-broths are usually without benefit to the patient with arthritis deformans and often result harmfully to the health or life of the invalid.

THE USE OF POLYVALENT STREPTOCOCCUS HORSE-SERUM IN CHRONIC ARTHRITIS

In the latter part of 1911 and the early part of 1912, two horses were immunized with approximately thirty strains of streptococci obtained from the foci of infection of the patients suffering from arthritis deformans. This serum was concentrated and refined and after heating was used in approximately twenty-five patients. The serum seemed to intensify the immunizing effects of the autogenous vaccines. In spite of the practice of all known precautions, every patient suffered after the second or third treatment from anaphylaxis. Usually this was manifested as an erythema and urticaria, with intense itching of the skin. There was usually a slight rise of temperature and much discomfort from muscular soreness, aching and joint pain. Three patients, all women, suffered from anaphylactic shock of such severity that they nearly died. Inasmuch as we could not prevent these reactions, by all known precautions, that part of the treatment was abandoned as a measure too dangerous to use. This we did with the conviction that the other measures enumerated before, to improve the immunity of the patient, were practical and sufficient.

When the improvement of the joints and the general condition of the patient permitted, the contracted muscles were stretched under gas anesthesia, and if necessary plaster casts were applied to the lower extremities. At the proper time calisthenics and graduated walking were instituted. Tonic hot-cold spray baths were given daily to some patients.

Hospital treatment is necessary to properly investigate and manage patients with chronic arthritis. Otherwise the necessary discipline, individual hygiene, proper rest and the later application of passive and graduated exercise will not be faithfully carried out.

DIFFERENTIATION OF ARTHRITIS DEFORMANS FROM OTHER TYPES OF CHRONIC ARTHRITIS

Based on these clinical and bacteriologic studies and experiments, I think we may now recognize arthritis deformans as a distinct clinical type. The proliferative and degenerative types of polyarthritis present a subacute or chronic course with exacerbations and remissions, polyarticular arthritis (periarthritis, synovitis, osteo-arthritis), chronic myositis with contractures of muscles and consequent deformities, palpably sore nerve trunks, trophic disturbances of the skin and its appendages, varying degrees of malnutrition and frequently a neurotic condition. Severe and mild degrees of the disease exist. In an early stage recovery may occur and in later stages with serious morbid structural changes the progress may be checked spontaneously. This is explicable when one recalls the fact that the etiologic chronic focus may disappear spontaneously by the development of a process of local immunity.

Chronic gonorrheal arthritis is often deforming and not uncommonly is polyarticular. The knee, ankle, wrist, shoulder and spine are the joints most frequently involved in the order named. Tenosynovitis is a common occurrence in gonorrhea, but myositis practically never. Male adults are more often infected than females. The frequency of gonorrhea in female children makes gonorrheal arthritis more common in girls than in boys. If a careful examination is made the focal gonorrhea can usually be found. In the male the seminal vesicles and prostate are the seat of the focus and in the female the vagina, fallopian tubes and probably the glands of the labia may harbor the organism. The skin anaphylactic test may be used to confirm the diagnosis. The removal of the cause; massage of prostate and vesicles, vasectomy to promote drainage of the vesicles and prostate and to permit the injection of antiseptic remedies into the vesicles through the vas deferens, and the necessary surgical and local treatment of the female genitalia will render the diagnosis absolute by the recovery of the patient.

Chronic tuberculous arthritis is usually monarticular, often suppurative, and begins as an osteomyelitis in the short bones or in the epiphysis of a long bone; there is frequently a tenosynovitis and practically never a chronic myositis. The clinical history is usually very characteristic. Often the bone or joint disease immediately follows trauma of some sort. After a period great improvement or apparent recovery occurs to be followed in a few weeks or months by a return of the joint disease, which then steadily progresses in severity.

Neuropathic joints (Charcot) are always associated with some of the characteristic signs of tabes dorsalis.

Chronic podagra, with the characteristic tophi and selection of the small joints as a rule is easily recognized. Gouty tophi may be present as a coincidence in arthritis deformans.

Senile arthritis with deformities due to Heberden's nodes, and atrophic changes may be difficult to differentiate from the degenerative (atrophic) type of arthritis deformans. The absence of chronic myositis, with contraction of the biceps humeri and masseter muscles and the age of the patient are helpful in differentiation. Senile changes may be coincident in arthritis deformans.

THE RESULT OF THIS METHOD OF TREATMENT

In those patients in whom no marked destruction of tissues has occurred, recovery has taken place in many

and others are convalescent. Patients with cartilaginous and bone disease have vastly improved and the progress of the disease has been apparently checked. Case reports are not included for lack of space.

CONCLUSIONS

1. Arthritis deformans is an infectious clinical entity manifesting chronic periarthritis, synovitis, proliferative and degenerative osteo-arthritis, chronic myositis with contraction of muscles and perineuritis or neuritis.

2. Usually coincident but secondary malnutrition and faulty metabolism aggravate the condition of the patient.

3. The infectious source is usually focal and located in the mouth (alveoli), faucial tonsils or antra (sinuses). Occasionally the focus may be in the prostate gland, seminal vesicles, the female genitalia, and probably also in a streptococcus chronic appendicitis or cholecystitis or a circumscribed streptococcus infection anywhere. That the infection may occur from a chronic streptococcus invasion of the intestines is a question to be decided.

4. The morbid anatomy of the experimental chronic arthritis is the same as that found in man. This morbid anatomy is the specific reaction of the infectious organism.

5. Arthritis deformans may be differentiated from other types of chronic arthritis by the characteristic coincident involvement of periarticular and articular structures, chronic myositis, consequent contractions of muscles, secondary trophic changes due to a faulty metabolism, malnutrition, etc.

6. The treatment and management must comprise: 1. The removal of the cause. 2. Improvement of the immunity by rest, personal hygiene, including good food, pure air and sunshine, rational calisthenics and physical culture, moral support and a cheerful environment. Autogenous vaccination may be added to still further improve immunity.

7. The clinical results confirm the principles embodied in this paper.

This investigation has been conducted by a group of workers cooperating with me. Dr. Homer K. Nicoll, the Dane Billings Memorial Fellow in Medicine in Rush Medical College, has made the cultures of bacteria and supervised the immunologic vaccinations and serum inoculations. Dr. D. J. Davis, pathologist at St. Luke's Hospital, has supervised the immunologic studies at that institution. Drs. George E. Shambaugh and S. A. Friedberg have performed the necessary nose and throat examinations and operations. Drs. John Ridlon, A. D. Bevan, Dean Lewis, Carl Davis and C. J. Rowan have given aid when surgical measures (stretching muscles, breaking up adhesions, and applying casts and braces) were required in the treatment.

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THE RÔLE OF THE PROSTATE AND SEMINAL VESICLES IN GENERAL TOXEMIAS *

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It is now becoming more and more generally recognized that the etiology of many obscure joint, cardiac, neurologic and other diseases is to be found in chronic infections in remote organs, and in recent years the tonsil, nasopharynx, and alimentary tract have come to be regarded as the frequent site of such infections. The extent to which the genito-urinary tract is to blame has not been appreciated, and in reviewing the literature one finds very few valuable articles giving exact data on this question. Of course, it has long been recognized that gonorrhea, both acute and chronic, is responsible for many general infections, but the part played by the acute and chronic infections of the higher genito-urinary tract, the kidney and bladder, the epididymis and testicle, the prostate and seminal vesicles, has received scant accurate attention.

In this article I shall confine my attention to the rôle of the prostate and seminal vesicles in chronic toxemias and remote infections.

The frequency of acute prostatitis and seminal vesiculitis is well recognized. The fact that in the majority of cases of gonorrhea, the posterior urethra, prostate and vesicles become involved is well known, but I believe that the profession fails to realize, or perhaps neglects the fact that chronic prostatitis and seminal vesiculitis are extremely common diseases, and that they may exist without producing symptoms or attracting the attention of the patient for years, only to show themselves as a danger-seat when the patient marries or becomes the subject of chronic rheumatism or other forms of remote infection and toxemia arising from an old prostatitis or vesiculitis.

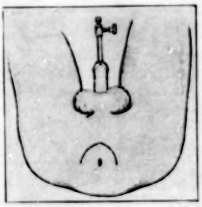

Fig. 1.—Showing the crescentic incision in the skin.

The original etiology of these cases is by no means always gonorrheal. Many arise from bacterial infections which come down through the urinary tract, having been eliminated through the kidneys during acute infections in other parts of the body. I have seen several such cases as a result of typhoid fever, and they are not uncommon in chronic inflammations of the kidney and bladder. Infections also reach the prostate from the rectum not infrequently as a result of proctitis, ulcer, hemorrhoids, etc., but more common still are those which come as a result of the long-continued frequent habit of masturbation, which in many cases produces an extensive chronic inflammatory process involving both the prostate and seminal vesicles and the tissues around them, so that one frequently finds an extensive enlargement and pronounced chronic inflammatory condition associated with local and remote symptoms sometimes of severe character.

The gross pathology of chronic prostatitis and vesiculitis varies so greatly that time precludes my doing more than mentioning the subject here.

On rectal examination often the prostate is very little enlarged, and may be quite smooth, but the surface is generally indurated, often variable in character, slight irregularities being present and adhesions to the rectum and lateral walls of the pelvis usually found. In the majority of cases the seminal vesicles are similarly affected, irregularity, induration and adhesions being the characteristic findings. In more pronounced cases there may be greater enlargement, sometimes very great, very marked induration, and sometimes softening, fluctuation, localized focal abscess, etc., though these are rare. The essential process is an endo-acinous and periacinous inflammation in the prostate and chronic inflammatory infiltration within and about the vasa deferentia and

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

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seminal vesicles. Owing to the fact that all these structures drain badly, being dependent on minute tortuous ducts and tubules, foci of chronic inflammatory infiltration remain unrelieved for years, often become surrounded by fibrous changes, and remain centers for the absorption of toxins and infections, and sources of local irritation, pain and discomfort.

It is indeed remarkable that any of these patients ever recover. As a matter of fact, in many chronic inflammations in this region recovery never occurs unless vigorous assistance is given either by the mechanical evacuation afforded by prostatic and vesicular massage or hot rectal douches, or by bacterial therapy or by operation.

SYMPTOMS CLASSIFIED

The results symptomatically of chronic prostatitis and seminal vesiculitis may briefly be classed as local, urinary, sexual, nervous and general.

The local symptoms are often so slight (merely a little discomfort, fulness or heaviness in that region) that it is most often the sexual changes which bring the patient for treatment.

The nervous symptoms are often so remote and disconnected that the prostate is not suspected. I have seen many cases of lumbago, sciatica, vague pains in the back, hips, thighs, perineum, groin, and often as far as the soles of the feet, caused by chronic inflammations of the prostate and seminal vesicles which by involving nerve terminals cause stimuli to be sent to the spinal cord and there transmitted to other visceral and superficial regions according to the dicta laid down by Head in his explanation of the etiology of referred pains.

I hope I may be pardoned for digressing somewhat to call attention thus to the great importance of examining the prostate in many painful conditions anywhere between the diaphragm and toes, when there are no localizing symptoms to direct attention to the prostate itself. In such cases it is often the site of an extensive chronic inflammatory process which is the cause of the whole trouble. I know of ten cases in which there was operation for renal calculus, the symptoms of which were typical: severe intermittent colicky pain radiating to the groin and associated with symptoms of hematuria and entirely due to a chronic inflammatory process in the prostate and seminal vesicles with reflex referred pains to the kidney region, the blood coming from a congested and inflamed posterior urethra.

It is with the conditions and symptoms resulting from absorption of toxins and bacteria from the prostate and seminal vesicles which it is my particular object to lay stress on, and perhaps I cannot do better than to cite a few cases to bring out some of the different phases of these conditions.

REPORTS OF CASES

CASE 1.—G. W. S., aged 31, complained of multiple arthritis of six years' duration following an old urethritis. There were no local prostatic symptoms. The patient was bedridden and reduced to a skeleton; he was unable to walk, use his hands or even his jaws. He voided urine normally, and there was no urethral discharge, but rectal examination showed that while the prostate itself was only slightly enlarged and indurated, there was an extensive plateau of infiltration above it. An operation through the perineum evacuated a great deal of pus with a resulting immediate benefit in joints which had so long been terribly inflamed.

CASE 2.—R. L. G. complained of arthritis of left knee and painful heels. The patient had had gonorrhea several years before, and now very slight urethral discharge and no urinary symptoms. Examination showed double Achilles tendon bursitis and exostosis of the os calcis, besides extensive arthritis of the left knee. The prostate and seminal vesicles, which gave forth no symptoms, were enlarged, indurated and adherent, and the secretion obtained from them contained pus. Treatment by rectal massage and intravesical irrigations of nitrate of silver gave good results.

CASE 3.—M. S. complained of sciatic rheumatism, pain in back, hips and thighs, and inability to walk without crutches. There were no urinary symptoms and no urethral discharge. The urine was clear and the kidneys negative. Roentgenoscopy revealed exostoses along the spine, and examination of the prostate and seminal vesicles disclosed a chronic inflammatory process, the secretion obtained by massage containing pus in abundance. Under local treatment the patient was soon able to dispense with his crutches and walk, and many of the referred pains had disappeared before plaster jackets were applied for the relief of the spinal exostoses.

CASE 4.—J. B. C. complained of severe dull pain in the right iliac fossa of several years' duration. The patient had had gonorrhea twenty-four years previously and four years later he began to suffer pain which had never left him.

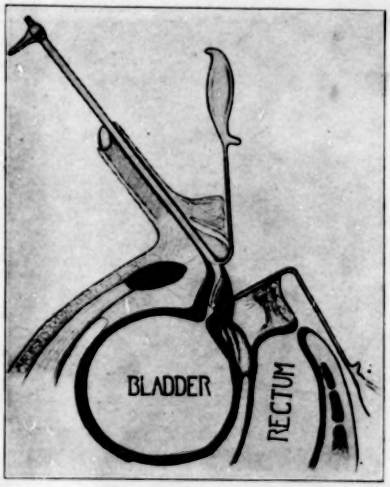

Fig. 2.—The tractor used as a sound in the posterior urethra to show the position of the membranous urethra and apex of the prostate.

The appendix had been removed, the kidneys suspended, various abdominal organs examined and the patient had had numerous operations without relief. Examination disclosed a chronic prostatitis and marked seminal vesiculitis on the right side; the nerve terminals being involved in the inflammation and giving rise to the referred pains from which the patient had suffered so long.

CASE 5.—G. H. R., aged 63, complained of severe pain in the back and legs of ten years' duration, which often incapacitated him from working. There was no history of gonorrhea. There were also frequency of urination and on coughing a severe pain across the lower abdomen. Examination showed a chronic prostatitis and vesiculitis with an extremely tender point in the middle of the prostatic urethra, and pressure on this was followed by the escape of a calculus from the urethral meatus.

Endoscopic examination showed a very large verumontanum, in the center of which was a cavity from which the calculus had escaped. The symptoms as described persisted regardless of the escape of the calculus until by treatment the prostate, seminal vesicles and verumontanum had been

brought to normal. Since then, for several years, the patient has remained entirely well.

CASE 6.—S. M. C., aged 58, complained of severe attacks of heart-disease, fever and frequency of urination. The patient was quite well until an attack of acute prostatitis, non-gonorrheal in character, several years previously. Since then evidence of myocarditis and severe organic change in the heart has come on, the condition being aggravated from time to time by temporary increase in the prostatic inflammation. Examination showed a very bad heart, myocarditis, auricular fibrillation characterized by severe attacks of dyspnea and very rapid heart-action. The prostate and seminal vesicles were chronically inflamed; infection by the colon bacillus and a chronic cystitis were present. Prostatectomy and seminal vesiculotomy were indicated but not carried out owing to the severity of the cardiac condition. Under local treatment the condition of the patient improved considerably for a time, but in a few months he died as a result of his heart-disease.

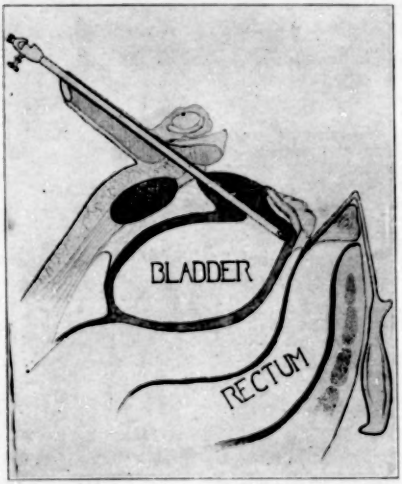

Fig. 3.—Tractor opened out, traction made and seminal vesicles exposed.

Patients with prostatic hypertrophy have in many instances an associated chronic prostatitis and seminal vesiculitis, and I have frequently seen severe joint troubles and neuritis, resulting from these conditions, absolutely relieved by perineal prostatectomy, often to the amazement of the patient at the unexpected cure of an old rheumatic condition from which he had suffered for years.

Glancing at the literature one finds numerous articles on gonorrheal arthritis and other forms of general gonococcus infection, all of which are too well recognized to need more than passing notice here.

Very little is to be found in the literature in regard to the remote infections and toxemias resulting from chronic diseases of the prostate and seminal vesicles.

In a recent report of 254 cases of seminal vesiculotomy performed on account of chronic inflammation of the seminal vesicles, Fuller states that 124 cases, or about 50 per cent., were associated with "absorption or toxic rheumatism," and that all of these cases were relieved in a most radical manner by the operation of vesiculotomy. In his last series of eighty-nine cases, "80 per cent. of the patients were well and free from all symptoms when passed from observation a month or six weeks after operation." One of his patients operated on three years before, after having been on crutches for seven years, is now in perfect physical condition.

Besides the article of Fuller one finds practically nothing in the literature as to the operative treatment of these cases, but numerous rather indefinite articles describing general methods of treatment, particularly by means of vaccines, serums, etc., with some enthusiastic and many unsatisfactory results.

The operation performed by Fuller is so well known that I need not refer to it here. This procedure, which requires such extensive incisions on each side of the buttocks, rectum and perineum and is seemingly so formidable, is shown by Fuller to be free from danger in that he has had no mortality in 254 cases.

An operation which I have been in the habit of carrying out is based on a desire to see the region of the prostate and seminal vesicles, and to be able to proceed thereon as indicated by the pathologic conditions found to be present.

The prostate is exposed in much the same manner as in perineal prostatectomy, the only difference being that instead of a sound in the urethra a long special prostatic tractor, which can be passed through the urethral meatus is employed. The usual inverted V-shaped cutaneous incision starting with the vertex of the V about 1¼ inches in front of the anus, and the two branches paralleling the ischiopubic ramus to a point about an inch to the outside of the anus on each side are used. After the fat and superficial fascia have been penetrated, the fossa on each side of the central perineal tendon bounded in front by the transversus perinei muscle, posteriorly by the levator ani muscle, and externally by the ischiopubic ramus is opened up by blunt dissection with the finger and scalpel. The bifid tractor is then introduced, thus pulling the levator ani backward and putting the central tendon on stretch. With a scalpel this tendon is divided immediately behind the bulb, and deep down the muscular fibers covering the membranous urethra and known as the recto-urethralis muscle are cut, thus allowing the rectum to be pushed back, and the urethra containing the closed long tractor exposed.

Up to this point the procedure has been practically that of perineal prostatectomy. Now instead of incising the membranous urethra, the long tractor is pushed down into the bladder, opened out, traction made, and the posterior surface of the prostate then exposed after separating the rectum from it, the operator being sure that he is in front of Denonvillier's posterior fascia, and working on the shiny capsule of the prostate itself, which is always the guide to show when one is in the proper layer of cleavage in separating the rectum from the prostate. By continued traction and use at the same time of the instrument as a lever by pushing the outer end toward the patient's hip, the prostate is compressed against the triangular ligament and the seminal vesicles are brought up toward the wound where, with good lateral and posterior retraction, any procedure which seems desirable can usually be carried out. Sometimes the adhesions around the seminal vesicles are so extensive that they have to be broken through before good exposure of these structures can be otained, but usually little difficulty is experienced in drawing the seminal vesicles close into the wound. Examination will then show that they are covered by the same transverse layer

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of fascia as the prostate, the anterior fascia of Denonvillier which forms the true strong capsule of the prostate and also covers transversely the seminal vesicles, vasa deferentia and intervesicular and retrovesical structures, and this must be divided before any of these structures can be attacked.

It is well here to make a careful survey of the site, to see whether the prostate is sufficiently abnormal in any portion to require incision or excision, and the same for one or both seminal vesicles. The vasa deferentia cannot be so easily detected, but after division of the fascia of Denonvillier they can usually be isolated, examined and opened if desired. Examination previous to operation should have shown with considerable accuracy the conditions present, and given an indication of the extent of the procedure which should be carried out; but the extent of the procedure will depend much on what the operator finds with the parts thoroughly exposed, when they can be palpated and explored. If the seminal vesicle is surrounded by considerable adhesions these should be freed as much as possible, and the vesicle either opened by one or more incisions or by removing a portion of its posterior surface. The fact that the seminal vesicle is a complicated structure running up and down in several loops before finally ending in the ejaculatory ducts shows the importance of a thorough drainage in several places if necessary, and I occasionally make several windows in the seminal vesicles thus uncovering the interior and supplying good drainage. Resection or incision to a great extent is usually unnecessary and undesirable, except in tuberculosis for which operation is usually contra-indicated, though easily carried out by this procedure.

The importance of "pus tubes in the male," as shown by Belfield, suggests that it may be found desirable in some cases to open widely the ampullae of the vasa deferentia which are easily discovered after the fascia which covers them and the vesicles is turned to one side by the two longitudinal or one transverse incision, and I am of the impression that much more satisfactory drainage for chronic collections of pus in the vasa deferentia can be obtained by this operation than through operations on the vasa in the groin or scrotum. The method of attack on the prostate itself depends, as remarked above, on the extent of the pathologic process, and should be by incision or excision, single or multiple, every effort being made, of course, to preserve the floor of the urethra and ejaculatory ducts and not to open into the urethra. If the median portion of the prostate is enlarged, indurated and obstructive it may be excised or enucleated from in front of the ejaculatory ducts from one of the lateral incisions in the prostate, but as a rule this is best attacked by the punch operation independently, unless a prostatectomy is desirable, when it will usually be best to employ the regular procedure rather than the method above described.

Fuller advises draining the seminal vesicles for ten days by means of rubber tubes, and his experience has been very extensive. It is certainly important not to remove the tubes or gauze packing too soon, else one is liable to have the external wound close with a recurrence of suppuration in the vesicles and prostate and recrudescence of the rheumatism, etc. The external wound is partly closed by bringing together first the levator ani muscles with single suture of chromicized catgut so as to restore them to their normal position in front of the rectum which they protect against pressure on the gauze or drainage tubes, and partial closure of the skin wound. I now generally bring the tubes and gauze out on one side and close the other completely with a continuous subcutaneous catgut suture.

The operation above described is not difficult, in fact much easier than prostatectomy. The long tractor capable of being passed through the urethra does away with the necessity of the incision of the membranous urethra to introduce the old prostatic tractor and thus avoids a urinary fistula, of even temporary character. The ability to see and palpate the prostate, seminal vesicles and vasa deferentia is, I believe, of prime importance in surgery here as elsewhere.

In conclusion, I may say that the prostate and seminal vesicles are very frequently the site of chronic inflammatory processes which often continue for years, give very few local symptoms and are the insidious cause of remote processes, as a result of absorption of toxins and bacteria, and chronic pains referred to other portions of the body, so that the symptoms produced are generally quite remote and apparently unassociated with the prostate and seminal vesicles. This fact should bring home

Fig. 4.—Exposure of seminal vesicles. Incision of the fascia of Dénonvillier preparatory to incision or excision of the vesicle.

to all practitioners of medicine the very great importance of rectal examinations as a routine procedure. Since such methods have been enforced at the Johns Hopkins Hospital in the medical department, many obscure and distant maladies have been cleared up and ultimately cured by treatment directed to the original source of disease, the prostate and seminal vesicles.

Cold Spring Lane.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BILLINGS AND YOUNG

DR. JOHN RIDLON, Chicago: Is anything to be done for the joint in these cases of chronic non-tuberculous joint disease? What happens if it is not treated? The bone disease usually increases in extent and severity, and finally, after some years,

the joint becomes ankylosed; the pain ceases and the patient is comfortable for life. If he chooses that, and you agree, well and good. The joint will not then need any mechanical or surgical treatment. If the patient does not choose that course, then you must choose between mechanical and surgical treatment of this joint. If, perchance, the focus of the disease is found and removed and the disease ceases, the joint will recover and be in as good condition as it ever was so far as function and position are concerned. If not, the deformity will go on, and it is the function of the orthopedist or the general surgeon to prevent the development of the deformity and lessen the pain. These chronic joint inflammations should be treated in the same way as a chronic tuberculous joint is treated, by immobilization and more or less protection for a certain period. So long as there is a tendency to the development of deformity, the joint should be held in the position for greatest comfort and best function and kept immobilized for months or even years. When the patient can stand without pain or discomfort in his immobilization apparatus and when much of the swelling and irritation found locally have disappeared, then I am accustomed to relieve the patient of his immobilization and test out the condition of his joint. Experience is the only guide in choosing the time for this, but there is no need of worrying too much about immobilizing these cases, even if they become ankylosed, because they will become ankylosed whether they are immobilized or not. The point to be remembered is that if the ankylosis occurs, the joint should be in the best possible position. If there is a deformity it can best be corrected at one sitting by force, anesthetizing the patient and then immobilizing the joint until all the soreness resulting from the manipulations has passed. In the case of the hip, the leg should be in slight flexion and the shortening which usually results from destruction of a hip-joint is compensated by a certain degree of abduction. The spine should be straight. The knee should be slightly flexed. In the case of the spine, it should be straightened out and held until it stays in position of itself. This should be done at once, or by repeated applications of force and plaster of Paris, forcing while the plaster is setting. I do not think that such patients should be operated on. The point is, however, that the patient should know that he is the one to choose. He should also know that he may have a good result without an operation.

DR. BRANSFORD LEWIS, St. Louis: In my own experience the posterior urethra is infected in over 90 per cent. of all urethral gonorrheal infections. Of late infections of this kind have been better controlled by the less irritating silver solutions, such as argyrol, nucleinate of silver, and so on; but at the same time, we cannot fail to observe the enormous frequency with which these parts of the tract are infected. Another phase of material importance is the fact that the infection is often not of venereal origin, and therefore apt to be overlooked by one who is not particularly searching in his examination. Even if a patient of this class pass all his urine into two glasses and both are clear, pus that comes from the seminal vesicles may fail to be observed. If you let the patient pass two glasses of clear urine, then massage the prostate and after this have him urinate again, and then find the urine cloudy, containing enormous numbers of pus-cells and possibly numerous gonococci or other microbes, you can determine with certainty as to whether he has seminal vesiculitis. Another point of importance is that in doing the massage of the prostate the patient should be told to place a little butter-platter under the meatus and catch whatever passes out from the urethra. This is subjected to the several steps of examination. By means of massage and heat, irrigations and the use of vaccines we can control these cases better than we used to when we did not have these methods of treatment. In the absence of success with these the operative method is resorted to, and I have used the one described by Dr. Young and found it entirely satisfactory. If only one point is remembered in connection with this subject, it should be that we must detect the focus of infection, which may have persisted for one, ten or fifteen years. By doing so it is possible to clear up a case in which the patient has been a sufferer from a disease which has been beyond the reach of ordinary surgical measures.

DR. D. N. EISENDRATH, Chicago: Not enough emphasis has been laid on the kidney in this symposium. There are so many cases which reach the general practitioner in which there is absolutely no localizing sign pointing to the kidney as the source of the infection. These cases may run along, sometimes for weeks or even months, with a temperature of from 99 to 104 F. and with no evidences of toxemia in the joints, but rather in the body in general. These are the cases that puzzle so many of us, and they are the cases that are so frequently treated and called, for lack of a better name, low typhoid, chronic malaria and cryptogenetic infection. Especially are these the cases in which the patient has been observed for a long time, with low-grade toxic symptoms, and then suddenly the fire flares up, the patient has a temperature of 103 and 104, but still there is no sign of kidney disturbance. Therefore, if we will only consider the kidney—in fact, the urinary tract—in making the differential diagnosis, we shall often clear up a mysterious case, and be able to benefit the patient. It is only by a process of exclusion, by examining the urine carefully, that we can make a correct diagnosis in many cases of chronic joint infections.

THERAPEUTIC PNEUMOTHORAX AS A PALLIATIVE MEASURE, SAFEGUARDED BY STEREOROENTGENOGRAMS

A REPORT OF TWENTY CASES FROM THE CINCINNATI TUBERCULOSIS HOSPITAL *

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AND
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This paper is not an introduction to artificial pneumothorax or a history of its use or technic. These points have been brought forward with increasing interest and detail since Forlanini's first published suggestion of the value of this treatment in 1882. Murphy, Brauer, Spengler, Saugmann, Schmidt, Lemke, Robinson and Floyd, Weiss, Hamman and Sloan, and many others have added valuable studies to our literature, and it is becoming a recognized method of treatment in some of our more advanced clinics and sanatoriums.

This report of twenty cases treated in the Cincinnati Tuberculosis Hospital and our deductions from the work there is intended to emphasize two things: (1) the value of this treatment as a palliative measure, and (2) the value, almost the necessity, of safeguarding the treatment by the use of the Roentgen rays. We attribute the good results and the lack of difficulty encountered in our treatment of these cases to our implicit following of the established technic as outlined by Hamman, and by the constant counterchecking and studying of the cases during the whole treatment by stereoscopic chest-plates.

In emphasizing therapeutic pneumothorax as a palliative measure we do not deny its value as a curative one, but we feel that we have not had sufficient time, experience or results to attribute to it this superlative value.

Exactly of what does this treatment consist in its present development, and what are the indications for its use?

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

Artificial pneumothorax is the introduction into the intrapleural space of an innocuous, slowly absorbable gas, which will collapse the diseased lung. The treatment is repeated until the clinical symptoms warrant the gradual cessation of the injections and the consequent normal reinflation of the lung.

This collapse and forced rest or immobilizing of the lung is indicated by the proved value of rest in the treatment of all tuberculous infections. Perhaps Nature, too, has given her suggestions as to palliative measures for tuberculosis, in the restricted muscular action of the chest, the pleuritic effusion, the hydropneumothorax and the closing of a large lesion with the drawn-over heart, often found in these cases.

The lack of contra-indications in properly selected cases is the best recommendation for induced pneumothorax. The operation is simple, the danger slight, the shock nil, and the effects most satisfactory.

The results and effects of this therapy are positive. The principal pathologic findings after collapsing the lung are that the cavities are emptied in part or in whole according to the extent of the pleural adhesions, caseous areas have become cicatrized, and above all, an extensive overgrowth of the fibrous tissue is permitted during the enforced lung rest, which is Nature's best method of healing such a condition.

The clinical effects of pneumothorax are most encouraging, and are really what we have been working for, in the absence of definite proof that we might obtain a cure by this treatment.

Fig. 1 (Case 1).—Before collapse.

Fig. 3 (Case 2).—Before collapse.

In the first place, with the introduction of the nitrogen, the lung collapses, except where held out by pleural adhesions. Any pain which follows injection is always due to the stretching of these pleural adhesions. Pleural bands have invariably been made out in close proximity to an indicated area of tenderness. The pain is always sharpest just after refilling and gradually becomes duller. It is remarkable, but true, that a patient suffers no other pain and comparatively little inconvenience of any kind, even when a whole lung is collapsed to a mere solid mass lying close to the spinal column. With the progressive treatment, all detrimental symptoms abate. The diminished amount of retained infectious material shows the usual results of lessened toxic

Fig. 2 (Case 1).—After collapse.

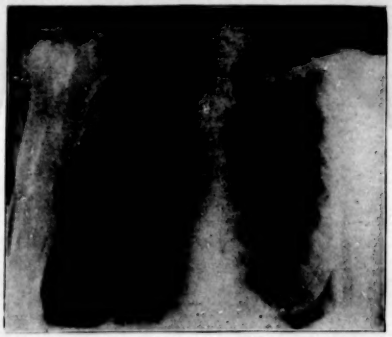

Fig. 4 (Case 2).—After collapse.

absorption—a fall in temperature and a reduced number of night-sweats, increased strength and appetite and final gain in weight. In addition, both the cough and the sputum are greatly lessened, and the elimination of the tubercle bacilli makes the patient less a source of infection; but the value of the treatment is best seen when a restless, despondent, hectic, emaciated, dependent cripple is transformed into a live, happy, resourceful being, who sleeps and eats well, and who goes about the grounds recommending the treatment to all who will listen.

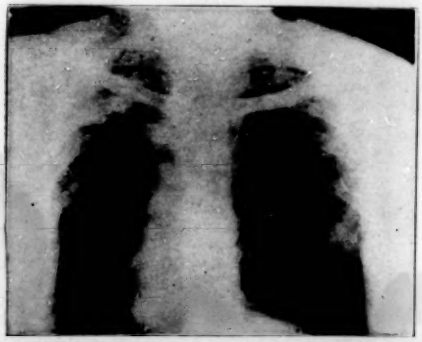

Fig. 5 (Case 7).—Before collapse.

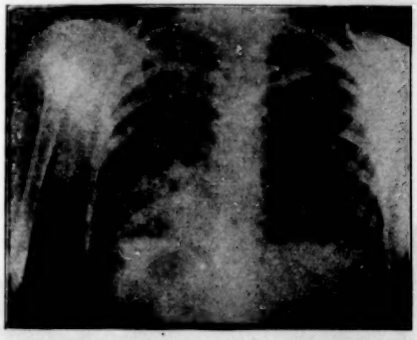

Fig. 7 (Case 12).—Before collapse.

These possibilities are facts. We have four such patients who have resumed work with our permission and two who have done so without it. It is a common thing for our patients to dress themselves after a filling and walk some distance to their wards; several even have walked a hilly mile and over, to reach a street-car, when they were impatient at waiting for the sanatorium bus.

So it is proved that artificial pneumothorax is a palliative measure.

The essentials for success with this treatment are clear:

Local anesthesia, perfected apparatus, accurate technic, careful asepsis, the ability of the one lung to collapse and of the other to carry the double burden, and the accessibility of the patient for the necessary refillings, form the most important items. The careful selection of cases (not very determinate as yet) often predestines success, and the Roentgen rays prove that refilling should be frequent and the gas-pressure slight, the amount of gas injected being just sufficient to keep the lung collapsed and no more. If the negative pressure is raised to zero we have found it to be more than enough.

We should like to dwell on each and every one of these essentials for success, but they and the dangers or complications encountered have been adequately written up so recently that we think it will be sufficient merely

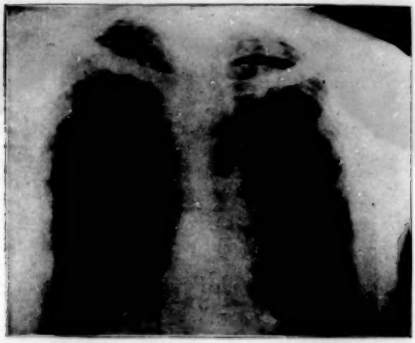

Fig. 6 (Case 7).—After collapse.

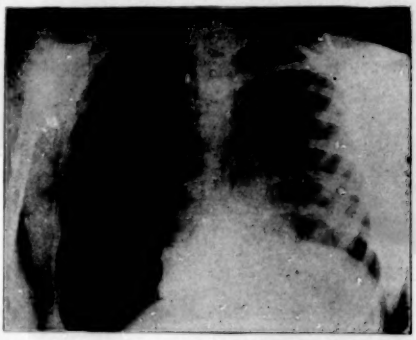

Fig. 8 (Case 12).—After collapse.

to recount the possible dangers in the order of their seriousness; possible, not probable, for we have encountered none of them save some difficulty in getting in, one spread of disease on the other side, and a slight dizziness or faintness experienced by three patients on arising after a refilling.

The possible dangers then are:

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First. Heart-misplacement and therefore derangement of blood-supply, a strain of the aorta, or a kink in the vessels resulting from too great pressure.

Second. Break in the mediastinum, from too great a pressure.

Third. Gas embolism, which might result from a puncture of the lung and the needle entering an artery. The possibility of this can never be entirely done away with, in using Forlanini's thoracentesis, but careful watching of the manometer and skilful manual technic will reduce this risk beyond the necessity of employing Brauer's thoracotomy, in our opinion.

The fourth danger is that of infection of the pleural cavity and resultant pleural effusion, and suggests a break in the asepsis. Effusion occurs in about one half of the generally reported cases.

The fifth, emphysema, is really more an inconvenience than a danger.

A sixth danger, abnormal conditions, has been avoided by never giving an injection during the menstrual period or just following a debauch.

From this consideration of the essentials for success and the hindrances to the success of artificial pneumothorax in the treatment of pulmonary tuberculosis, we can deduce this much: The treatment is certainly palliative, as a rule, and offers relief when usual methods of treatment have been unsuccessful. It is of especial value in the control of pulmonary hemorrhages. While it will possibly never become a routine treatment for consumption, its use will certainly be indicated for those with quiescent lesions on one side and acute recrudescence of the other, and for such advanced cases as may at least profit by the certain amelioration of clinical symptoms. Our opinion is that eventually it will be utilized for much earlier lesions, and the collapse will be obtained by more radical surgery, when the pleural cavity is obliterated by adhesions.

If we stop here, however, we have progressed very little farther than our predecessors. Our first point was to prove artificial pneumothorax a palliative measure; our real advance was to show how the constant use of the Roentgen ray in the treatment predetermined success and prevented disaster.

By the use of stereoscopic roentgenograms, we have been enabled to select cases, to watch the progress of the disease, to determine the extent of the lung collapse, to note the pressure on the heart and mediastinum, to exclude pleural effusion, and to safeguard the unfilled side.

From roentgenograms, as from physical examinations, we cannot ascertain whether we may or may not enter the pleural cavity. Of course the plates show us the fibrosis, and we know that when there is but a small amount of connective tissue entrance is usually easy, and when there is great fibrosis, entrance is difficult or impossible; but among the intermediate cases it is hard to differentiate.

The roentgenograms, however, do give us accurate information when percussion and auscultation fail; for we have learned from stereoscopic roentgenograms that it is almost impossible to map out accurately the extent of pneumothorax by percussion, because in some cases the lung is collapsed anteroposteriorly and in others from the mediastinum toward the chest wall; in others the lung is adherent to the chest wall as a streamer, collapse taking place around the various attachments, whereas complete collapse from chest wall to mediastinum is rather the exception. It is of great interest in any of these cases to watch the cavities becoming gradually obliterated by successive injections of the gas. The position of the heart cannot always be made out by percussion or auscultation either, as it is frequently pushed from the left posteriorly, rather than altogether from the left to the right. In short, these conditions can be accurately determined only by the Roentgen rays. Also, it is a great satisfaction to us to be able to say that in no case in which the gas has been injected has pleural effusion developed, and we are very glad to have our roentgenograms to substantiate our statement; but perhaps the greatest value of roentgenography here lies in being able to watch the progress of disease in the uncollapsed side.

We now present the report of twenty cases from the Cincinnati Tuberculosis Hospital in which we have given treatment with therapeutic pneumothorax as a palliative measure, safeguarded by the use of stereoroentgenograms.

Of the twenty cases treated six cases should not receive consideration as a palliative treatment for pulmonary tuberculosis. Two patients refused further treatment after the first injection, and in four cases we did not gain a satisfactory entrance into the pleural space, so that of the twenty cases treated we have fourteen which represent at its best therapeutic pneumothorax in pulmonary tuberculosis. The accompanying tabulated classification of the cases will present them perhaps more clearly.

CLASSIFICATION OF CASES

Condition before treatment:	
Unilateral	1
Bilateral	19
Hemorrhage cases	6
Cavities without hemorrhage	5
Cavities with hemorrhage	5
Condition during treatment:	
Failed to get in	4
Pleural successfully found	16
Filled but once	2
Results of treatment:	
Gained in weight	6
Losing in weight	6
Neither lost nor gained	2
Gained but now losing	3
Activity opposite side increased	1
Sputum reduced	14
Tubercle bacilli in sputum reduced	9
Sputum became negative	5
Cough reduced	14
Temperature reduced	10
Hemorrhages recurred after treatment	1

REPORTS OF CASES

CASE 1.—Motorman, aged 32 (Figs. 1 and 2). Bilateral lesion; right side most extensive. Has had numerous severe hemorrhages. Collapsed right side. Hemorrhages and cough controlled; fever normal; gained in weight. Had a relapse with hemorrhage during car strike, but has recovered. Is now doing well.

CASE 2.—Woman (Figs. 3 and 4) has bilateral lesion most marked on left side. Cavity in left upper. Has had several very severe hemorrhages. Left side collapsed. Cavity closed by pressure from mediastinum to lateral wall. No hemorrhage since first injection. Patient is doing well, but there is evidence that the disease is extending in right side.

CASE 7.—Man, aged 34 (Figs. 5 and 6). Bilateral, left most extensive. Many severe hemorrhages which have entirely ceased since first injection. Cavity is much reduced and patient is doing well.

CASE 12.—Woman, aged 18 (Figs. 7 and 8), had all symptoms of florid phthisis; temperature 104, etc. Examinations showed bilateral lesion with cavities in upper left. Left side completely collapsed, cavity emptied. Patient gained 12 pounds. Temperature normal. Sputum negative, cough reduced.

ABSTRACT OF DISCUSSION

DR. CHARLES L. MINOR, Asheville, N. C.: This subject is so vast in scope that I cannot possibly go into its details as I should like to do. The essentially important matter is the

proper use of the manometer as a guide to the performance of the operation. Anybody working without such an instrument is criminally negligent, for air embolism may occur and may suddenly be fatal, whereas by the use of the manometer it should become almost impossible. When the needle has been introduced into the chest no one with any prudence will turn on the gas until he has first connected to the needle the manometer and seen whether or not there are negative fluctuations of air amplitude, usually at least 1 cm. If these are present, he can safely turn on the gas and allow it to flow. Further, the pressure of the gas in the chest should be tested on the manometer after each 100 c.c. have flowed in. In this way it is possible constantly to know the intrathoracic pressure and to avoid raising it too high. That this may be dangerous is proved by the fact that there is a case on record in which overpressure caused the gas to break through the mediastinum and produce a double pneumothorax. The safe pressure to use is something under 200 c.c. of water; I have gone as high as 170 or 180 c.c., but others have gone well above 200 c.c. without bad effect. Whatever the pressure indicated, if severe pain and marked shortness of breath occur, the operation should be temporarily stopped, but moderate pain is quite natural and can be disregarded. One of the great troubles of the operation is that, in some cases, the other lung wakes up into activity and causes the operation to be a failure. To avoid this, we should be careful to introduce the gas slowly, not over from 1 to 300 c.c. at the first operation, although Dr. Brauer uses as high as 1,800 c.c.; gradually increasing the amount of gas each time, we can introduce much larger quantities, but, as Dr. Durham has noted, it is not necessary to do more than keep up a moderate pressure in order to keep the bad lung collapsed. I do not, however, agree with him that the pressure should not be positive, but only neutral.

It is not a question of the number of cubic centimeters which you put in, but of the amount of pressure you produce. Reinjections should occur at first every two or three days, but finally at longer and longer intervals until they come every two or three months. As fibrous tissue forms, however, so much pressure is not needed to keep up collapse. The general rule is to keep the pressure up in the chest for from one to three years, when it is allowed slowly to reexpand. There is a tendency in this country to be too radical in the choice of cases, but, at present at least, this procedure should be confined to hopeless, advanced cases in which no other measure is applicable; patients who, in all probability, are going to die, but in whom the good lung is only moderately involved are excellent for the application of the procedure. The ideal indication is a destructive process in one lung with the other lung in excellent shape. Another indication is uncontrollable hemorrhage, which at times it stops with marvelous rapidity. The apparatus can be home-made for about nine dollars or bought from a dealer for forty dollars.

Dr. C. K. Roys, China: Have you used oxygen instead of nitrogen?

Dr. Kennon Dunham, Cincinnati: Oxygen is absorbed more rapidly than nitrogen. Some operators advise that oxygen be used to avoid air embolism on the principle that if it enters a vein and is carried into the circulation it will be absorbed quickly and no harm result. Air embolism is best avoided by an intelligent use of the manometer and reliance should not be placed on the character of the gas used. I purposely avoided describing the manometer and its readings because that has been so perfectly done by Hamman and Sloan. Two men should be associated in this work. When I am here Dr. Rockhill stays at home and sees that the patients are properly filled and vice versa.

I desire to emphasize the comparatively slight pressure necessary and the slight pressure advisable. When we go from a negative pressure to a neutral pressure we have usually gone far enough and a slight positive pressure is all that is ever permissible. I am sure that within a year Dr. Minor will be advocating this point of technic as strongly as we are. Much trouble has been unnecessarily caused by the great amount of gas injected and the high positive pressure obtained. With a patient lying comfortably on the table and the manometer recording perfectly, there is great temptation to inject a few hundred more cubic centimeters of gas. This may be just enough to cause undue pressure on the opposite side and to prevent the perfect recovery which should have been expected. Finally, the patients gain weight, eat better, sleep better, suffer less and more generally improve if attention is given to securing just the necessary amount of pressure and no more.

ETHER PERCENTAGES *

WALTER M. BOOTHBY, A.M., M.D.
BOSTON

Surgical anesthesia depends on the establishment in the blood and tissues of a definite ether tension, corresponding to about 15 per cent. of ether vapor in the alveolar air. My experience with the Connell anesthetometer, as well as the physiologic observations of Waller of London University, has demonstrated the fact that the "anesthetic tension" varies very little in different patients—the strong, robust alcoholic requires little, if any, greater ether tension than does a child for the same degree of anesthesia.

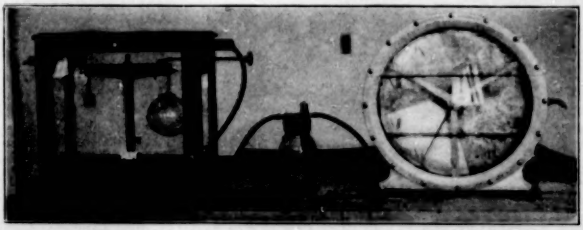

Fig. 1.—Apparatus for determining percentage of ether vapor obtained by passing air over liquid ether.

In order to induce anesthesia quickly, air containing approximately 30 per cent. of ether vapor should be administered for a period of from two to twelve minutes, depending on the size of the subject in relation to the rapidity of his circulation and respiration. By the early administration of strong ether vapor, diffusion occurs more rapidly from the inspired air, through the walls of the alveoli into the blood, allowing the latter in its turn to more quickly bring about in the tissues the tension of ether vapor requisite for surgical anesthesia. As the required tension is approached, the ether vapor in the inspired air is gradually reduced to 15 per cent. If less than 15 per cent. ether vapor is administered, outward diffusion occurs from the tis-

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

From the Surgical Service and Respiration Laboratory of the Peter Bent Brigham Hospital.

* Because of lack of space, this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

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sues and blood to the air and the anesthesia becomes lighter. On the contrary, the continuous administration of 15 per cent. ether vapor after the "anesthetic tension" is once established does not mean that the patient is receiving more ether, but merely that diffusion both in and out is prevented; in brief, a state of equilibrium is established, and so long as it is maintained a condition of safe ideal surgical anesthesia will exist.

Without question the anesthetomoter devised by Dr. Karl Connell of Roosevelt Hospital, New York, is the ideal apparatus to use. By it the "anesthetic tension" can be rapidly obtained and indefinitely maintained. Unfortunately this apparatus is not available to every one, and it seemed to me desirable that the ether percentages as obtained by the use of our more common forms of apparatus should be determined experimentally. This I have done, as well as to correct—in the light of our new knowledge—some of the erroneous beliefs which are so generally accepted in regard to ether anesthesia.

DESCRIPTION OF APPARATUS

Figure 1 represents the apparatus as set up for determining the percentage of ether vapor obtained by passing air over liquid ether contained in a Woulfe bottle and other "vapor" apparatus. On the left is the Waller gas balance calibrated to read off ether percentages from 1 to 50 direct.

In the center is represented the Richardson ether vapor apparatus; in the experiments, however, I used a 1-liter (1-quart) Woulfe bottle because the thermometer could be introduced into the liquid ether more conveniently by means of the middle opening; the bulb of the thermometer was always submerged.

On the right is shown a Bohr 10-liter gas-meter by which the volume of air per minute used during the experiment was obtained.

EXPERIMENTS AND EXPLANATION OF CHARTS

The air was passed through the meter, from the air-main in the laboratory, at a constant rate; taken over the surface of the ether and from there to the gas-balance. The temperature of the liquid ether and percentage of ether vapor were taken simultaneously.

In the chart (Fig. 2) the upper line represents the percentages, and the lower line the temperatures obtained when the air was run at from 4 to 6 liters per minute. The ordinate represents temperature and percentages; the abscissa time in minutes. While the ether is comparatively warm the percentage as recorded by the balance rapidly rises from 0 to 31 and then begins to fall slowly and parallel to the fall in temperature. If the percentage curve is extended backward as represented by the dotted line, it will be seen that at first the ether vapor was very strong—about 52 per cent.—corresponding to a temperature of the liquid ether of about 18 C. (64.4 F.).

Figure 3 is similar to Figure 2 in every respect, the more rapid rise and fall being due to the fact that the rate of flow of the air is twice as fast (10 liters per minute). The percentage curve extended backward by the dotted line gives 56 per cent. for a temperature in the liquid ether of 20 C. (68 F.).

Figure 4 represents an experiment in which the rate of air-flow was increased to 18 liters per minute. This rate corresponds pretty closely to that which an anesthetist would produce by his use of a foot-pump in a case in which the patient is difficult to etherize, for under such circumstances his tendency is to pump faster and faster. It is evident that such rapid pumping (and in deep breathers large volumes are necessary) defeats the very purpose for which it is done, because the large amount of air passing over the ether causes the latter to evaporate very quickly. As a result, the temperature of the liquid ether falls quickly far below 0 C. (32 F.), and therefore the amount of ether vapor in the air is less than 15 per cent. Concisely put, the faster the anesthetist pumps the lower will be the ether percentage obtained and the greater the difficulty, if not impossibility, of etherizing the patient. After the experiment had been continued for thirty-seven minutes the Woulfe bottle was placed in a water-bath at a temperature of from 35 to 37 C. (95 to 98.6 F.), with the result that the temperature of the liquid ether immediately rose and the percentage of ether vapor increased correspondingly. In the chart I have indicated by the heavy dotted line the percentage of ether necessary to induce and maintain anesthesia for the first hour in an operation for cerebellar tumor. The distance between the two curves, the upper representing the percentage needed and the lower the actual percentage obtained from passing air over liquid ether, illustrates forcibly the reason that an ordinary apparatus will often not anesthetize a patient. The advantage that can be obtained by immersing the ether bottle in warm water is as strikingly shown by the rise in the ether percentage.

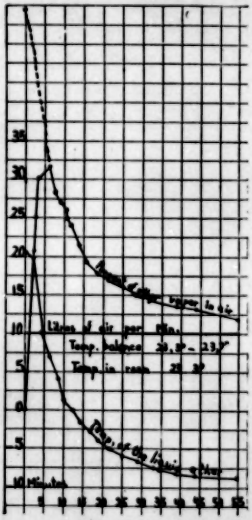

Fig. 3.—Chart of percentages and temperatures. Feb. 18, 1913. Same apparatus.

Furthermore, the fact that throughout the entire experiment the temperature in the balance varied less than 1 degree proves conclusively that any change produced by the warming device cannot be attributed in any way to a change in temperature of the inspired mixture of air and ether. This experiment confirms the earlier work of Cotton and Boothby[1] on the fallacy of warming the inspired air so far as affecting the patient by the temperature is concerned; the present work goes farther, however, and gives the true explanation of the practical value of immersing the bottle containing the ether in a bath of warm water.

Figure 5 illustrates the effect of immersing the ether bottle from the start in a water-bath at from 35 to 37 C. (95 to 98.6 F.), with the air flowing at 15 liters per minute. By this means we obtain much higher percentages, so high, in fact, that from the practical point of view, when a water-bath is used, care must be taken

1. Cotton and Boothby: The Uselessness of Warming Anesthetic Vapors, Surg., Gynec. and Obst., 1912, xv, 724.

to dilute the mixture in some way before it is inspired by the patient.

Figure 6 shows the percentage that would be obtained at a slower rate of air-flow. If a still slower rate was used a still higher percentage would be obtained for a longer time, because the liquid ether would not become so rapidly cooled by its quick evaporation. It must be remembered, however, that the patient may get two or three inspirations consisting of 50 per cent. ether unless care is taken to prevent this. Although no such great danger is present from the inhalation of strong ether vapor as there is of chloroform, yet it should be avoided. For this reason one must never use chloroform in this manner for the well-known reason that one single inspiration of concentrated chloroform may instantly and permanently stop the heart. I have frequently seen a chloroform bottle and ether bottle immersed in a water-bath in the same air-circuit, so that by the simple turning of a valve the air is made to pass over the chloroform instead of the ether; the purpose of this combination is to control patients difficult to anesthetize with ether.

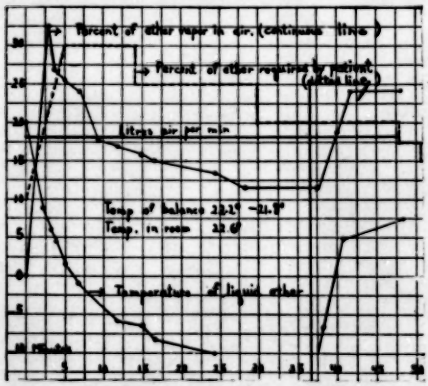
Percent of ether vapor in air (continuous lines)
Percent of ether required by patient (dotted lines)
Litres air per min
Temp. of balance 22.1° −21.9°
Temp. in room 22.6°
Temperature of liquid ether

Fig. 4.—Chart of percentages and temperatures. Feb. 18, 1913. Same apparatus. At 37½ minutes the bottle of ether was immersed in water at 35 C. (95 F.).

No such difficulty should exist if an ether bottle of sufficient size (1-quart jar about half full) is used and immersed in water at 35 C. (95 F.). As the boiling-point of ether is 35 C. the water should never exceed this temperature. The water cools rapidly and must be kept up to 35 C. by constant addition of warm water by an attendant or by a small electric heater. Water at 35 C. will keep the liquid ether at a temperature of about 15 C. (60 F.) for the average rate of flow of air; at this temperature 45 per cent. ether vapor if undiluted with air can be obtained, a percentage far stronger than that which ever should be used without dilution.

In Figure 7 I have plotted the curve of the vapor tension of ether at different temperatures as determined by Regnault.[2] For comparison I have put in the points as determined by me in the preceding experiments. Many of my points fall directly on the true curve and most of the rest very close to it. The general close agreement between my experimental results and the true curve of the vapor tension of ether substantiates in a very satisfactory manner the fundamental correctness of my observations and deductions therefrom.

This curve can be made of practical use by placing a centigrade thermometer in the liquid ether of the vapor apparatus. At any given temperature of the ether one may be sure that one is obtaining the corresponding ether percentage; then if one has a valve which will accurately shunt the air-current so that one-fifth, one-fourth, one-third, etc., can be passed over the ether and the rest around the ether, a close approximation of the ether percentage which the patient is getting can be readily estimated.

NEW METHOD OF DETERMINING ETHER PERCENTAGES OBTAINED FROM A MASK

I shall now give a brief consideration to the ether percentages obtained from a mask. On account of the size of the dead-space of the balance, the readings taken will give only the average of a considerable number of respirations. Therefore the results obtained must only be considered as an average, since individual inspirations may be irregularly higher and lower.

For this problem I have arranged the apparatus shown in Figures 8 and 9. The artificial mouth and trachea of the patient consists of two brass tubes of ¾ inch diameter; one of these is used for "inspiration" and the other for "expiration." The tube for inspiration has a series of eight thermometers spaced at intervals of 2 inches, the first being directly at the mouth. The air is conducted back to the mask by the other brass tube containing water to saturate the air with moisture. This method affects the mask with warmth and moisture in the same manner as expired air, and yet does not influence the thermometers; therefore the temperatures as taken from the intake tubes will give a very fair indication of the temperature of air and ether as inspired by a real patient. The brass tubes or "artificial trachea" are immersed in a water-bath kept at a constant temperature of 37 C. (98.6 F., body temperature) by means of a small electric heater shown lying outside the bath. The mask used is placed on a little shelf that acts as a "face" and the mouth of the trachea opens directly under it. Ether is administered by a small constantly running stream, regulated to the desired amount by a stop-cock from the little glass container shown over the top of the hose; a glass tube, which can be easily moved, takes the ether to the mask and distributes it over the mask. The hand-pump was especially made for me, and by means of a check-nut can be set so that a single stroke will give any amount desired up to 1,500 c.c.; the number of strokes per minute and therefore the volume per minute are regulated as desired. The pump sucks in the air through the intake tube from the trachea and delivers it through the outlet tube to the balance; from the balance the air passes back through the second trachea to the mask.

In Table 1 are shown four of the many experiments by this method. During the stage of induction which requires 30 per cent. ether, the temperature of the inspired mixture falls to 12 C. (53.6 F.); as soon as anesthesia is induced, 19 per cent. ether is sufficient, and with this percentage the temperature rises to 23 C. (73.4 F.).* Still later, when only 15 per cent. ether is needed, the temperature would be even higher.

The well-known increase in depth of respirations in alcoholics appears to be due to the greater excitatory power of ether on the respiratory center in such subjects than exists in the case of non-alcoholics. The more

2. Regnault: Chem. Kal., 1912, ii, 105, Table 77.

* Room temperature equals 24 C.

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expert the anesthetist the less excitatory effect does the ether have, and the easier it is to induce anesthesia. It is very hard for the beginner to increase the percentage of ether rapidly and yet smoothly without causing "suffocation" and therefore deep breathing on the part of the patient.

The difficulty of obtaining the high percentages requisite for the rapid induction of anesthesia in a deep breather is as great experimentally as it is in actual practice. The third experiment cited in Table 1 illustrates the tremendous amount of ether that must be poured on the mask to bring 24 liters of air per minute up to 30 per cent.

The words "on" and "off" after the percentages indicate the advantages to be obtained from a little anesthetic trick that deserves better recognition: namely, the greater ether percentage that can be obtained by placing the hands on the mask; the warmth of the hand aids the vaporization of the ether as well as preventing a leakage of air around the bottom of the mask. In practice I put a hand on one side of the mask and drop the ether on the exposed side, reversing sides about once a minute.

TABLE 2.—CALCULATION OF AMOUNT OF HEAT LOST BY RESPIRATION DURING ETHER ANESTHESIA

(Open wire mask with 16 layers gauze.)
Assumptions (based on experimental evidence):
Vol. of respired mixture (average): 10 L. per min., 600 L. per hour.
Containing: ether (average): 16 per cent., 96 L. per hour = 8 lb. (approximately).
Containing air (average): 84 per cent., 504 L. per hour.
Temperature of mixture as inhaled at mouth: 15 C.
Physical data:
Liter weight of ether: 3.53 gm. Specific heat of ether: 0.4796.
Liter weight of air: 1.29 gm. Specific heat of air: 0.2374.
Formula used:
Vol. × L. Wt. × Sp. Ht. × Deg. = Gm. calories lost.
Calculation.
Ether: 96 × 3.53 × 0.4796 × 22 = 3575 gm. cal. = 3.6 calories.
Air: 504 × 1.29 × 0.2374 × 22 = 3395 gm. cal. = 3.4 calories.
7.0 calories.

Careful consideration of all factors involved shows that there is practically no change from the average loss of heat by the vaporization of water from the lungs.

Vierordt gives the following average values of heat elimination:

	Daily Cal.	Hourly Cal.	Per Cent.
1. By urine and feces	47.50	1.98	1.8
2. By expired air: (a) warming air	84.50	3.52	3.5
(b) vaporization of water	182.12	7.59	7.2
3. By evaporation from the skin	364.12	15.18	14.5
4. By radiation and conduction from the skin	1,791.82	74.65	73.0
	2,470.82	102.92	100.0

These experiments explain away the apparent contradiction between the clinical fact that large, vigorous people, especially if alcoholic, need a great quantity of ether to produce anesthesia, and the physiologic law that all persons require the establishment in the body of approximately the same tension of ether vapor to produce the same depth of anesthesia. A recognition of this fact transfers the blame for a difficult and bad ether from the patient to the technic and ability of the anesthetist.

The question of the loss of heat directly attributable to the administration of the anesthetic mixture during an operation is one of importance. If there is an undue loss, effort should be made to prevent it; but if the loss proves to be comparatively small and therefore negligible, attention should be directed to more efficient and natural means of conserving the body heat.

The complete calculation is given in Table 2. It is evident that a loss of about 3½ calories per hour can be attributed directly to warming the ether, and an equal amount of bringing the temperature of the air itself up to body temperature. This makes a total of 7 calories; Vierordt assigns 4 calories as the normal amount.

It is more difficult to estimate the amount of heat eliminated through evaporation of water in the lungs. A consideration of the following facts leads to the conclusion, however, that little, if any, variation from the normal occurs. The points to be considered are:

Reference to Vierordt's figures at the bottom of the table will show that the normal elimination of heat by the lungs totals about 11 calories. During ether anesthesia it cannot at the outside be more than 16 or 17 calories, or an increase of 5 or 6 calories.

To contrast with these figures we must consider the amount of heat eliminated by the skin in the same period. Vierordt gives for this an average of 90 calories an hour. The danger to the patient of losing an undue amount of heat from the skin by evaporation, radiation and conduction is far greater than can take place from the lungs.

The conclusion seems inevitable that our attention should be directed to keeping the patient dry and warmly covered, and not to the procedure of warming the anesthetic mixture. Such warming of the inspired air is futile from the point of view of thereby sufficiently preventing a lowering of the body temperature during a surgical operation.

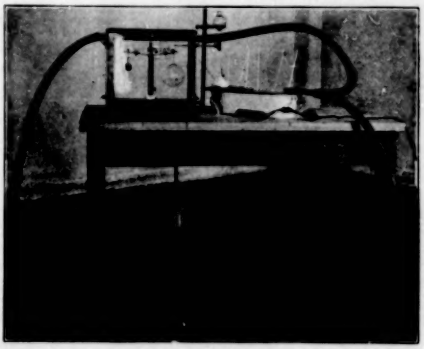

Fig. 9.—Apparatus for determining ether percentages from a mask, complete.

SUMMARY

I. 1. Apparatus and experimental details are given for determining the ether percentages that are obtained by passing air over liquid ether.

2. The advantage of keeping the liquid ether warm is demonstrated and the beneficial action of the procedure explained by showing the effect on the ether percentages obtained and the want of effect on the temperature of the inhaled mixture.

II. 1. A new method of determining the percentages of ether vapor and the temperature of the inspired mixture as obtained from a mask is described. The method used is considered to give results comparable to the percentages and temperatures existing in actual clinical etherization.

2. Clinically it is known that large, vigorous (alcoholic) patients require a great quantity of ether poured on the mask to produce anesthesia. Physiologically it is recognized that essentially the same tension of ether

vapor in the body produces in all subjects the same depth of anesthesia. It is pointed out that the clinically difficult cases are those in which the patients are deep breathers, those whose volume of air respired averages over 20 liters instead of below 10 liters per minute. The apparent discrepancy between clinical experience and the physiologic law, therefore, consists in the difficulty of the anesthetist in bringing such a large volume of air up to the percentage of ether required. In short, the anesthetist and not the patient is to blame for a difficult and bad ether.

III. From a calculation of the loss of heat directly attributable to warming anesthetic vapors, it is demonstrated that such loss is negligible in comparison to that from the body surface. Consequently it is futile to warm the anesthetic vapors.

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ADMINISTRATION OF ALKALOIDS BEFORE ANESTHESIA *

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In the older records in medical literature there is abundance of evidence that many of the drugs which are employed to-day and which we are prone to consider recent discoveries were used by the ancients for the relief of pain during surgical and other procedures. They made decoctions from the leaves, bark and roots of plants and trees, which they drank, inhaled the fumes of or applied locally. In order to produce sufficient insensibility for operative measures very large doses had to be given. As a result patients frequently remained unconscious for hours or slept on to death. When the anesthetic properties of nitrous oxid, ether and chloroform were discovered, these agents rapidly replaced the drugs employed at that time, but it was generally thought necessary or expedient to reinforce them with drugs possessing hypnotic virtues. Morton, for example, gave large doses of opium before administering ether. As the action of anesthetic substances and the technic of their administration became better understood, the practice was quite generally abandoned. In 1900 Schmeiderin directed attention to the advantages of administering morphin and scopolamin alone or before inhalation anesthesia, and reported the results of this method in ten instances. The sedative and hypnotic effects of scopolamin on the insane is well known and Schmeiderin, an alienist, found that the insane could be more easily managed if given morphin and scopolamin prior to general anesthesia.

The administration of sedative drugs before anesthesia is of great importance and may be considererd from at least three points of view, namely, the patient's, the anesthetist's and the surgeon's. The three alkaloids most commonly employed are morphin, scopolamin and atropin. Before the physiologic action of scopolamin was well understood, Schmeiderin maintained that its action was antagonistic to that of morphin, and, unfortunately, his statements have been rather widely accepted. Hyoscin and scopolamin are now universally recognized by pharmacologists as identical chemically and physiologically. Therefore, the two names will be used interchangeably. Scopolamin and atropin are closely allied alkaloids belonging to the deadly nightshade family. The difference in the structural arrangement of the molecules composing them is believed to explain differences in their action. In order to facilitate a comparative study I have indicated in the accompanying table the actions of morphin, scopolamin and atropin in so far as they are concerned with the subject at hand.

That there are certain advantages in preliminary medication no one of experience will question, but the disadvantages must not be lost sight of. As the comparative safety of ether and chloroform has been settled through a clear understanding of their physiologic action, immediate and remote, so must the advantages and disadvantages of sequence, mixed anesthesias and preliminary medication be settled through a knowledge of the action of the drugs singly and in combination. It is well known that one drug frequently intensifies the action of another and this is especially true of those drugs whose actions are similar. The advantages said to accompany the administration of alkaloids before general anesthesia are as follows:

1. Less of the anesthetic is required. Glandular activity is diminished, thereby reducing the danger of pneumonia. There is less vomiting before and during anesthesia, therefore a smoother narcosis and also less postoperative vomiting.

2. The patient's apprehension of impending danger is lessened or altogether abolished and he enters the anesthetizing room in a quiet, sleepy manner. No resistance is made to preliminary preparation.

3. The stage of excitement is less pronounced and muscular relaxation is more quickly developed.

4. The patient remains asleep after completion of operation, hence suffers less pain. Let us analyze these advantages.

LESS OF THE ANESTHETIC IS REQUIRED

The lessened amount of the anesthetic required is not so important as is generally supposed. It has been conclusively shown experimentally that the degree of concentration of the vapor is of much greater importance than the length of the administration or the amount used. A very concentrated vapor used for a few minutes will do more damage to lung and kidney epithelium than a lesser concentration over a long period. The amount used is always relative. An experienced anesthetist uses much less than a novice. In considering the lessened amount of the anesthetic used the action of the substance which replaces it must be taken into account. That the danger from ether or chloroform is diminished has certainly not been proved. On the contrary, a study of the reports of deaths or other bad results clearly shows that the premedication was actually responsible either indirectly by intensifying the action of the anesthetic or directly through its continued action. There are always symptoms from ether and generally from chloroform which give adequate warning of approaching danger, and both are so evanescent in their action that the patient revives in a comparatively short time when they are discontinued; but, when enduring drugs or combinations of drugs have been previously administered, hours may elapse before the patient is past danger. A review of the literature shows that practically all of the reported deaths were caused by respiratory failure often accompanied by cyanosis and Cheyne-Stokes' respiration, suggesting a paralysis of the centers in the medulla. The conservative surgeon and anesthetist, although they may have seen no deaths or alarming respiratory depressions,

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

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should not pass lightly over the experience of others, but should instead weigh seriously the advantages and disadvantages of a procedure which carries with it additional risk to the patient. Scientific men cannot fail to appreciate the reasonableness of maintaining a factor of safety by protecting the respiratory center and by exercising all possible care in the technic of anesthetization.

GLANDULAR ACTIVITY IS DIMINISHED, THEREBY REDUCING THE DANGER OF PNEUMONIA

Many of the postoperative pneumonias have nothing whatever to do with the anesthetic but are embolic in their origin and occur quite as frequently after local analgesia as after general anesthesia. A pneumonia which develops later than thirty-six hours after anesthesia should not be considered as due to the local action of the inhaled ether. Since the open method of etherization has become so universally employed, the tendency to postoperative pneumonia and nephritis has been materially lessened.

If the head is turned to the side as soon as the neck-muscles are sufficiently relaxed to allow it, and this can be done early in induction, the salivary secretion will escape at the angle of the mouth or remain in the cheek where it can be sponged out. This position has the further advantage of preventing the tongue from falling back in the pharynx and obstructing respiration. That the aspiration of mucus ever produces pneumonia is a doubtful possibility. If ether actually predisposes to pneumonia it does so by its direct action on the lung epithelium, and it is just as reasonable to presume that the checked secretion would render the unprotected cells more susceptible to irritation. Only rarely does the bronchial secretion become sufficient to interfere with blood oxygenation and when it does, the anesthetic may be withdrawn at a time when operative procedures will not be interrupted or interfered with; the mucus acting as a foreign substance will cause coughing when the patient is still asleep and the bronchi will be cleared by a few efforts. The anesthetic can then be continued. This seldom needs to be repeated. Because of the checked glandular secretions, patients frequently complain of great discomfort before and after anesthesia caused by the dryness of the mouth and throat at a time when water is denied them. Patients should be well protected during artificial sleep to prevent as far as possible loss of body heat. A similar statement applies during conveyance from operating-rooms through draughty halls and elevator shafts when resistance is low.

LESS VOMITING BEFORE AND DURING ANESTHESIA; THEREFORE A SMOOTHER NARCOSIS AND ALSO LESS POSTOPERATIVE VOMITING

There will be no vomiting during the induction of narcosis if the patient has been properly prepared. Vomiting during anesthesia always indicates a light uneven narcosis; in other words, with proper technic an absolutely smooth anesthesia is obtained without preliminary medication. The degree of narcosis must fit the operation and the character of the tissues being dealt with. The physician anesthetist, being familiar with the operative procedures, will anticipate the steps of the operation by keeping in touch with the operator and will produce a deeper narcosis when indicated. For example, after the clamps are placed in stomach and intestinal work only sufficient anesthetic is required to prevent vomiting, as there is little sensation in those structures. This is also true in thyroidectomies after the skin incision; little anesthetic is necessary until the skin sutures are being placed; then a deeper narcosis is essential lest the patient move and interfere with this step of the operation.

That postoperative nausea and emesis are lessened is questionable. That vomiting may be delayed is quite understandable from the continued action of the morphin and scopolamin. Patients feel nauseated or begin to vomit several hours after their return to bed or at a time when they should and probably would be over it if the nausea were due to the anesthetic.

TABLE 1.—THE ACTION OF MORPHIN, SCOPOLAMIN AND ATROPIN

	Morphin*	$C_{17}H_{21}NO_4$. Scopolamin	$C_{17}H_{23}NO_3$. Atropin
Respiration	"Is a powerful depressant to the respiratory center." "The characteristic effect is to lessen its activity, diminishing the rate and depth of respiration."	"Hyoscin is not in any dose a respiratory stimulant and in large doses it is actively depressant to this function."	"Moderate doses stimulate respiration, large doses depress it."
Circulation	"Exerts no direct action on the heart which continues to beat after respiration ceases." "Dilates the vessels of the skin leading to a flushing of the surface, especially the face."	"Small doses raise blood-pressure. Pulse is not ordinarily influenced."	"Increases blood-pressure and greatly accelerates pulse."
Nervous System	"Action is entirely central. Toxic doses produce paralysis of the respiratory center in the medulla."	"Generally depresses the brain producing sleep, but possesses little or no analgesic effects." "Occasionally produces restlessness with hallucinations and delirium."	"Large doses cause restlessness and excitement."
Pupils	"Contracted pupils."	"Dilates the pupil when administered internally or applied locally."	"Pupils dilate on internal administration or local application."
Glandular Activity	"Glandular secretion is less active unless nausea is produced when there is an increase of saliva and perspiration."	"Less glandular activity produces dryness of the mouth, throat and bronchi."	"Diminishes or completely arrests secretion."
Kidneys	"Depresses kidney function."	"Depresses kidney function."	"Depresses kidney function."

*Wood, H. C., Jr.: Pharmacology and Therapeutics, 1912. Stevens: Materia Medica and Therapeutics, 1909. Withaus and Becker: Medical Jurisprudence, Forensic Medicine and Toxicology, iv.

APPREHENSION OF IMPENDING DANGER LESSENED

In lieu of the stupefying effects of morphin and scopolamin for producing a peaceful mental state we propose cheerful kindness, tactful sympathy, suggestions as to hoped for improvement or restoration to health, all of which will do much toward quieting a nervous patient. Excitement and haste should never be apparent; likewise, joking or other forms of hilarity in the anesthetizing room frequently impresses the nervous patient with fear that he is not receiving the close attention that the situation demands. A calm, courteous, masterful personality is a desirable requisite in an anesthetist as it does much toward inspiring confidence, and with confidence comes a sense of security and quiet. Final preparation of the field of operation during induction of narcosis not only shortens the anesthesia but helps to divert the patient's mind from the anesthetic.

STAGE OF EXCITEMENT LESS PRONOUNCED

When the technic of the induction stage is properly carried out the so-called "stage of excitement" is either absent or so slight as to be scarcely noticeable except in alcoholics. If patients of the latter class are arranged on the table with restraint straps so that they can be controlled, stimulation passes off in a few minutes. The development of muscular relaxation is only a matter of a little more time.

If an opiate is required for the relief of pain it can be administered when the patient is sufficiently awake to complain. Then one can be guided by conditions as to indications and contra-indications for its administration. Following nitrous oxid, it can be given at the completion of the operation while the patient is still on the operating-table.

Disadvantages of preliminary medication to general anesthesia may be summarized as follows: 1. Danger of respiratory paralysis. 2. Destruction of pupillary reaction. 3. Varying effects of the drugs. 4. Necessity of having a trained, experienced anesthetist in charge of the administration. 5. Predisposition to pneumonia in mouth, jaw and throat operations. Necessity for constant attendance until awake. After-effects as vomiting, headache and a blocking up of secretions. Prolonged respiratory depression which may favor pulmonary edema.

Let us now consider these disadvantages.

DANGER OF RESPIRATORY PARALYSIS

When machines are designed calculations are made to determine the points on which greatest stress will fall and an effort is made to strengthen or fortify these points, in order to provide for contingencies that may arise. In the case of anesthesia the respiratory center is the specially vulnerable point, and every hypnotic drug administered increases the burden which it is called on to bear; therefore, when we employ narcotic drugs before general anesthesia we display poorer judgment in our anesthetic technic than does the designer of machines. "Any dose of morphin that produces systemic effects depresses respiration. Hyoscin is not in any dose a respiratory stimulant and in large doses is actively depressant to this function" (Wood). The combined action of these two drugs is much greater than the sum of their separate action. In other words it is an example of the well-known therapeutic observation that one drug may intensify or augment the action of another, and this is especially true in a scopolamin, morphin, ether or chloroform combination. A much smaller quantity of chloroform or ether will paralyze the respiratory center if it is already depressed by morphin and scopolamin, and therein lies the danger.

Comparatively speaking, a patient may be fairly safe if an experienced anesthetist is in charge, but the method is especially dangerous if an untrained, inexperienced person is administering the anesthetic, as he may fail to recognize approaching respiratory failure and continue the anesthetic until breathing actually ceases. A review of the literature indicates that such respiratory failure frequently proves fatal, in spite of all efforts at resuscitation.

DESTRUCTION OF PUPILLARY REACTION

I unhesitatingly place next in importance to respiratory depression the destruction of the pupillary reaction. To one who is capable of interpreting properly this reflex, it is of the utmost value. There is nothing else which will denote so absolutely the degree of narcosis, or give more certain warning of approaching danger or indicate it more clearly when it is already present. Eyelid, pharyngeal and corneal reflexes when present simply denote a light anesthesia.[1] The amount of relaxation in the muscles of the neck and jaw, especially the latter, is of considerable value but not always reliable. A change in respiration and circulation occurs just before vomiting takes place and is so similar to the change when too deep a narcosis is present that without the aid of the pupil it is frequently difficult or impossible to tell which it is. The modus operandi called for being different in the two conditions, it is essential to be able to distinguish between them.

VARYING EFFECTS OF THE DRUGS

Because of the varying effects of scopolamin its purity was at first questioned but it is now well known that equal doses taken from the same specimen affect different people variously, or the same person is variously affected at different times. On account of such idiosyncrasies it has been suggested that patients be given trial doses on the day preceding the operation. It is also a wise precaution to inquire regarding the effect of morphin as not infrequently patients know of unusual reactions they are likely to exhibit toward this drug.

A TRAINED ANESTHETIST SHOULD BE IN CHARGE

It is often maintained that untrained persons should not administer anesthetics, to which I most heartily agree, but inasmuch as this is frequently done, the patient should be safeguarded in every possible way. The surgeon may be delayed a few minutes before muscular relaxation develops without preliminary medication, but it may be time or a life saved in the end. If respiratory failure develops when only ether or chloroform has been used, automatic respiration continues when once established, because the introduced poisons are quickly dissipated. But not so when drugs whose actions continue for some time, as morphin and scopolamin, have been administered.

PREDISPOSES TO PNEUMONIA IN OPERATIONS OF MOUTH, JAW AND THROAT

In operations of the mouth, jaw and throat an early awakening is most desirable. Morphin allays the reflex excitability of the air-passages, thus retarding coughing and favoring the retention of aspirated blood or vomitus in the trachea and bronchi, a condition which predis-

1. The touching of the cornea is absolutely unpardonable and is as unscientific as it is unclean. Serious eye-infections frequently follow such uncalled-for practices.

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poses to pneumonia. Many people are unable to take morphin even in moderate doses without distress and vomiting and in such patients the disagreeable after-effects of ether or chloroform would be aggravated. On account of the respiratory failure which may develop after the patient has been returned to bed, constant attendance is necessary for several hours. By checking sweating, it throws a greater strain on the kidneys whose function is already depressed. Allow me to cite from my own experience.

A young woman was given 1/4 grain morphin and 1/150 grain scopolamin followed by a forty-five-minute ether anesthesia, during which time a laparotomy was performed for some pelvic trouble. The patient was returned to bed in fair condition. Nearly two hours later respiratory failure developed and she was revived by artificial respiration. About an hour later respiration again failed and artificial respiration was required a second time after which, although the respiration was shallow for a time, it regained its normal depth and frequency.

A similar experience was furnished by a robust man in middle life who was being operated on for fracture of the inferior maxilla.

The patient had been given 1/6 grain morphin and 1/100 grain atropin. The anesthetist was a trained, careful, observing man who assured me he had given a very small amount of ether. Respiration failed early in the operation and was with difficulty reestablished. The operation was continued and, when the patient complained, ether was given but respiration soon failed again. I was called from an adjoining room and we succeeded in establishing automatic respiration after some time and much anxiety. The operation was completed without further anesthetic. Although respiration was superficial and slow it did not cease again, but it was three hours before consciousness returned. There can be no possible doubt as to the cause of respiratory failure in either of these cases, for if it had been due to the ether, automatic breathing would have continued when once established by artificial means as there was no obstruction to the entry or exit of air.

Another experience, unfortunately, did not terminate so favorably.

A woman, aged 36, suffering with exophthalmic goiter was given 1/6 grain morphin. An hour later a light ether narcosis was produced and the right superior thyroid vessels ligated and the left vessels exposed ready for ligation, when respiration, which had been shallow, ceased. All effort at resuscitation proved futile.

It is true that the woman was an exceedingly "bad surgical risk" but I am satisfied that I have anesthetized many equally bad with no adverse results. There have been several other instances in my work in which alarming depressions or Cheyne-Stokes' respiration occurred without the development of paralysis which was probably due to an early withdrawal of the anesthetic. A familiarity with the literature shows me that my experience is in no way unique, as there are many reports, not only of temporary respiratory failures, but of deaths during narcosis and after patients have been returned to bed. Persons who were formerly enthusiastic supporters of the practice of administering alkaloids before general anesthesia have either abandoned it entirely or use it only in selected cases and give very small doses. Standing orders for the same fixed dose for every patient without regard for age, condition or operation are certainly not to be recommended.

The selection and administration of anesthetics should be placed on the same sound, scientific basis as asepsis or the practice of surgery. Competent anesthetists, like competent surgeons, are not agreed on all subjects, but we are coming to a better understanding of the physiology of anesthesia, and now that this very important branch of medicine is receiving a much-needed review, we may hope for better anesthetists and better anesthesias. I trust the time is not far distant when the study of anesthetics will be made an obligatory part of the curriculum of every medical college. Surgeons who work with regularly qualified anesthetists should consult with them regarding the selection of the anesthetic and the best method of administration, espepecially in the so-called "surgical risks." As the anesthetist is responsible for that part of the work, he should be allowed the privilege of giving or withholding alkaloids before anesthesia. The surgeon may be likened to the captain, the anesthetist to the pilot and the patient to the ship. The captain must of necessity depend on the pilot to steer the ship into and through the darkness of oblivion back to the light of consciousness. It is the pilot who, seeing the shoals and sandbars and realizing how near they are to disaster, questions the chosen course. The experienced pilot is much better able to cope with the situation than the inexperienced and yet he, too, although seeing danger ahead, may not be able to escape because the undercurrent, which is the method of anesthesia employed, is beyond his control.

INDICATIONS AND CONTRA-INDICATIONS

Indication: Local analgesia.

Contra-indications: Morphin and scopolamin are contra-indicated, in the case of patients in whom the respiratory center is depressed or likely to become depressed through operative procedures, obstructive dyspnea due to growth within or without the trachea causing pressure, or exophthalmic goiter; in operations about the mouth or throat; in the case of debilitated and cachectic persons or those suffering with continued sepsis; in patients presenting any degree of stupor or those susceptible to morphin, in children and elderly people, and when untrained, inexperienced anesthetists are administering the anesthetic.

CONCLUSIONS

1. The administration of morphin, scopolamin and atropin before general anesthesia has certain advantages but these advantages are not sufficient to counterbalance the risks attendant on their employment.

2. The loss of the pupillary reflex is a serious handicap, as nothing else indicates so unerringly the degree of narcosis.

3. That the danger from ether, chloroform or nitrous oxid is diminished is contrary to the evidence at hand.

4. They should not be employed when untrained, inexperienced anesthetists are in charge, as the anesthetic is rendered more complicated and extra skill and judgment are required.

5. The routine use of certain fixed doses before every anesthetic regardless of the patient's condition should be discouraged.

6. The employment of alkaloids has a distinct field of usefulness before local analgesia.

5740 Jackson Avenue.

An Essential to the Success of Vaccine Treatment.—When the infection has been ascertained the question of a vaccine comes to the front. Vaccination is good when done under proper circumstances and preceded by a correct clinical diagnosis. Without a clinical diagnosis vaccination is mere scientific quackery. Good results are not likely to ensue when a pyosalpinx has been overlooked or an appendix full of pus.—*Clin. Jour.*

NITROUS OXID AND OXYGEN ANESTHESIA *

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Dr. Teter, Miss Hodgins and Miss Toot of Cleveland and Dr. McKesson of Toledo have administered nitrous oxid for surgical purposes over twenty thousand times without a death from anesthesia.

In the hands of the expert nitrous oxid is perhaps the safest known anesthetic, while it is perhaps the least safe in the hands of the inexpert. In equally expert hands ether may rival nitrous oxid as to immediate mortality, but ether is wholly outclassed by nitrous oxid as to the indirect postoperative morbidity and mortality. This striking difference is wholly beyond the control of the anesthetist because it rests on a chemical basis. The chemical reactions which favor nitrous oxid anesthesia and handicap ether anesthesia are the following: Nitrous oxid produces anesthesia by reason of its interference with the use of oxygen by the brain-cells; it apparently exerts no other influence except this oxygen interference; therefore its total effect on the body continues but a few minutes beyond the termination of its administration.

Ether, on the other hand, produces anesthesia by dissolving the lipoids of the brain; in addition, unfortunately, ether dissolves many other important lipoids in vitally important structures, such as the lecithin in the red corpuscles—it even breaks up this important structure, as is evidenced by the appearance of hemoglobin in urine, and by a postanesthetic anemia; ether also dissolves the specialized fats in the kidney, the liver and other organs, and, perhaps most unfortunate of all, the lipoids in the phagocytes. Hence it is that ether puts to sleep not only the patient but also the host of defenders, the phagocytes. The result of this is seen in the strikingly adverse effect sometimes following ether anesthesia in the presence of acute infections. These adverse ether effects are especially striking when compared with the effects of nitrous oxid.

Lung complications following nitrous oxid anesthesia are no more frequent than they are in normal persons who have received no anesthetic. I have never known a fatal postanesthetic pneumonia following nitrous oxid. Nitrous oxid plays a passive rôle so far as causing or increasing an existing nephritis is concerned, so that we no longer see postoperative suppression in elderly subjects following anesthesia. As a general anesthetic for diabetics, nitrous oxid is without question the anesthetic of choice. These patients apparently take it with no harmful results whatever, and up to the present I have neither seen nor heard of any deleterious effects following its administration for seventeen amputations in diabetic gangrene.

In comparing ether with nitrous-oxid anesthesia we may say that the dangers and difficulties of nitrous-oxid administration are technical and controllable, while those of ether are inherently chemical and uncontrollable. What, then, are the principal points in the technical control of nitrous oxid? First of all, the induction of anesthesia should be so gradual and careful that never for a moment is there cyanosis and never any muscular twitching on the way to complete unconsciousness. Nor is this all. After superficial unconsciousness is reached, the finesse is continued until regular rhythmic respirations are established and the stage of surgical anesthesia for nitrous oxid is reached.

This is not so deep as that for ether. The patient will "feel" the surgeon's instruments far more readily than under ether, which is a great advantage to the cautious surgeon as it warns him against needless roughness. Under certain circumstances nitrous oxid should be supplemented by ether, for instance, in the case of topers, patients under high nervous tension, and certain abdominal operations in which mass-traction in dislodging tumors must be made; under these or any other circumstances, pink nitrous-oxid anesthesia, if not adequate, is supplemented by ether. I am not an advocate of nitrous oxid alone, or of ether alone, but of good anesthesia.

Muscle tone is not so completely abolished as under chloroform or ether, because under nitrous oxid, surgical anesthesia is much nearer consciousness. Patients who go to the operating-room in fear show this much more markedly than do tranquil patients; in other words, the former are fighting subconsciously during the anesthesia. In order to overcome this factor by dulling their keener perceptions and rendering them oblivious to their surroundings, patients, excepting the very young, the old and the feeble, are given preliminary hypodermic injections of morphin and scopolamin from one and a half to two hours before being taken to the operating-room, so that by this means a large percentage of them retain no unpleasant memory of either going to or coming from the operating-room.

Muscle rigidity under nitrous oxid was formerly a handicap. Crile has now solved this problem so completely that, by following his method it is necessary to use abdominal tapes to hold the viscera out of the operative field in exceptional cases only.

The first factor in obtaining complete relaxation is to have the patient brought to the operating-room in a neutral state mentally, so far as any fear of the operative procedure is concerned. This is accomplished by the preliminary hypodermic. Then the muscular system lacks the tone that we see in preparation for a fight or flight with the accompanying fear. Having no mental anxiety, the patient falls to sleep under nitrous oxid as naturally as though at home in bed. Compare with their condition the state of the patient who is brought to the operating-room in mortal fear. Even when unconscious every muscle is tense, pupils are dilated, respiration is increased and labored, and pulse-rate accelerated. This state is prone to continue during the whole anesthesia.

The second factor in muscle rigidity is tissue-trauma during the operation. Every surgeon has seen muscles increase in tone and contract while they are being cut, and has noted how a lightly anesthetized patient strains while he is attempting to pack off the intestines. When the abdominal wall is being cut through the same reflex is involved as when one is expecting an abdominal blow and hardens his muscles as a protective measure. This persists, even while the patient is unconscious, as a reflex reaction to trauma. This factor is present under any general anesthetic up to that point at which muscle-tone is abolished by the depth of anesthesia. The factor of tissue-trauma may be disposed of by blocking the entire operative field with 1:400 novocain solution. The block, however, must be absolute, for if any impulses get through, the muscles at once increase in tone with the resulting rigidity. Technically this procedure demands considerable practice before the operator is able to open an abdomen and keep it flaccid like the open abdomen of a recent cadaver.

This practice of locally blocking the operative field is far-reaching in its influence. When one is manipulat-

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

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ing an unblocked sensitive tissue, the immediate change in respiration and the restlessness of the lightly anesthetized patient teach him manual gentleness and precision, so that he comes ultimately to work as it were with "the velvet hand." This gentleness in turn permits the more kindly healing of wounds because there is less tissue-repair necessary. At the same time the patient's postoperative discomfort is lessened so much that the majority of patients are surprised at their ease and the shortened period of convalescence. Then in addition manual gentleness creates a feeling of sympathy between operator and anesthetist so that they come to play into each other's hands for the mutual benefit of the patient—the surgeon realizes that not a few anesthetic difficulties have their origin in the manipulations and so gives the anesthetist time to deepen the narcosis before completing his own procedure.

Only from one-half to two-thirds the usual amount of inhalation anesthetic is needed when the operation is done under complete anoci-association.

Nitrous oxid meets a need that no other form of narcosis meets: the patients who are most gravely ill take it best and are not in the least harmed by the procedure. Patients experience none of the disagreeable smothering sensation associated with the inhalation of ether vapor, but have merely the feeling of sailing away through the air and notice no disagreeable taste or smell, for the gas is nearly odorless. On regaining consciousness the patient has only one-third the nausea associated with ether, though occasionally there may be morphin nausea.

If we profit by Crile's suggestion in anesthetizing children, we are able to spare them a terrifying ordeal. The principle depends on a primitive instinct which prompts one to combat any condition which tends to curtail free respiratory exchange—in other words, to fight against asphyxia; so that if instead of placing a mask over a child's face one gives him the free end of the gas-tube to play with while the nitrous oxid is flowing, directing it in the meantime toward his nose, he will shortly become sleepy and doze off, when the mask may be applied without any protest.

There is less shock under nitrous oxid than under any other anesthetic. Shock cannot develop unless the nerve-cells have an ample supply of usable oxygen. In the production of shock, the latent energy of the central nervous system is changed to kinetic energy; that is, oxidation of the chromatin in the nerve cells is produced as a reaction to the incoming traumatic stimuli, and manifests itself in nerve impulses. Provided the stimuli from the periphery are sufficiently severe and long-continued, the central nervous system exhausts itself. Now the underlying principle of nitrous-oxid anesthesia is that it curtails the intracellular ability to use oxygen so that *a priori* one expects that shock would be much less marked under it than under any other which does not depend on this principle for its action. Crile and Prendergast have most ably demonstrated this fact in the laboratory and have shown that in animals traumatism under ether will produce twice as much shock as will traumatism under nitrous oxid. The same fact is seen clinically in our grave traumatic cases. In such, having in view the amelioration of the shock already present, nitrous oxid is the anesthetic of choice. Shock arising from our own operative procedure we never see, on account of the strict avoidance of the factors which are causative in its production.

The object of a surgical operation is not only to cure the disease but also to return the patient in the best physical condition and in the least time to his position in society, subjecting him in the meantime to the least possible danger. I think that nitrous-oxid anesthesia when used in connection with local blocking of the operative field, best furthers these aims. Technically this form of anesthesia is more difficult and exacting for the surgeon, yet I feel that we are amply repaid in sacrificing our convenience for the best interests of the patient because, first, our patients have returned to their work in progressively better condition; secondly, our mortality has progressively decreased so that in the last thousand cases in the surgical service at Lakeside Hospital in which anesthesia was given by the anoci method, there was a total mortality of only 0.8 per cent. In fact, the comfort of the patient at large has become such a marked feature of this method that the public with us is coming to demand this dual form of anesthetic.

Osborn Building.

INTRATRACHEAL INSUFFLATION ANESTHESIA (MELTZER-AUER)

REPORT OF A SERIES OF FOUR HUNDRED AND TWELVE CASES *

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Meltzer and Auer have shown that continuous insufflation or air into the trachea under moderate pressure is capable of ventilating the pulmonary alveoli, of effecting the necessary exchange of oxygen and carbon dioxid and sustaining life for many hours when all respiratory movements have been abolished by curare.

They have shown that it is the most effective and ideal method of artificial respiration known. It then occurred to them that it might be a means of introducing ether vapor into the respiratory tract, and the extensive and careful series of experiments by which they developed the method of intratracheal insufflation anesthesia are too recent and well known to require review in detail.

This paper will deal simply with personal experience with the method on my service at the Roosevelt Hospital during the past two years in a series of 412 cases, including a great variety of conditions, in many of which we believe it to possess special advantages.

The cases of the series were distributed as follows:

Locations of Operations	No.
Head and neck exclusive of goiter	77
Goiter and exophthalmic goiter	21
Thorax	17
Breast	25
Abdomen	137
Kidney and ureter	25
Miscellaneous	110
Total	412

There have been no deaths or serious accidents in our series. When the tube is once in the trachea one has ready for instant use the most perfect means now known for the artificial respiration; consequently we have used it by preference in our most difficult and critical cases. We do not use the method to the exclusion of other forms of general anesthesia by any means. Gas and ether, gas and oxygen, drop ether, combined local and general anesthesia and pharyngeal insufflation are

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

employed freely, the attempt being made to fit the anesthetic to the patient and not the reverse, but we do find many conditions in which we believe the intratracheal method to have distinct advantages. During the period in question 2,155 operations have been performed on the second surgical division, less than 20 per cent. of the total under intratracheal anesthesia.

Difficulty of intubation is and probably will continue to be the chief obstacle to a more general use of the intratracheal method. The difficulty, however, has been greatly exaggerated; all of our interns acquire the knack very readily and have trouble in only a small percentage of the cases.

In some cases the difficulty is real, for example, in obese patients with short and thick necks, or in those who do not relax readily under the preliminary anesthesia, for good relaxation is essential to easy intubation.

Sometimes the anesthetist will fail after several attempts, the tube entering the esophagus each time, causing irritating delay and prolongation of the preliminary anesthesia. When this occurs after two or three attempts it is our custom to have another man try, and often, although no more skilful, he will succeed at once as the first man, having once lost the way, is apt to repeat his mistake.

We have tried the Boothby-Cotton curved guide and other devices for intubating by the sense of touch, but prefer and use almost exclusively the Jackson direct-vision laryngoscope.

The anesthesia is essentially light, and in a few alcoholics and robust adults we have had difficulty in securing quiet anesthesia and good relaxation. The use of a preliminary hypodermic of morphin and atropin in such cases generally obviates this trouble, and in no instance during the past year have we had to abandon the method on this account.

SAFETY OF THE METHOD

With a suitable apparatus (many such have been devised, some simple, some very elaborate) we believe that the method is absolutely safe if certain cardinal principles of technic are understood and carefully observed:

1. Intubation should be done by direct vision, or, if by touch, with the utmost care to avoid trauma to the larynx or trachea.

2. The tube must not be too large, its diameter not more than half that of the glottis; 24 F. should be the maximum for the average adult, ranging down to 18 F. or even smaller according to the size of the larynx and of the patient.

3. The tube must not be inserted farther than 26 cm. from the incisor teeth; that is, its tip should be at least from 1 to 2 inches above the bifurcation of the trachea. A tube pushed on down into a bronchus and plugging it might cause serious mischief.

4. Overpressure must be carefully guarded against, best by a suitable safety-valve attached to the apparatus. The average pressure used is from 18 to 25 mm. of mercury; from 35 to 40 mm. is a safe maximum. If from a defect in the apparatus or from any reason the pressure is not known and under absolute control, the insufflation should be discontinued at once.

5. If the tube enters the esophagus by mistake, it should be disconnected and pressure made on the epigastrium to deflate the stomach before it is withdrawn and replaced in the trachea. We have had this happen a number of times, but have never seen any untoward results.

6. The ether vapor should be of moderate concentration, and must be absolutely free from droplets or spray of liquid ether. The apparatus devised by Dr. Karl Connell, assistant surgeon to the Roosevelt Hospital, has enabled us to make accurate observations as to the strength of ether required. The maximum strength used for maintaining anesthesia is 21 per cent. by weight, and this is graded down to about 14 per cent. as the operation proceeds. We have had no experience with higher degrees of concentration, but would fear possible pulmonary irritation.

SHOCK

We are convinced that shock is noticeably less with insufflation than with other methods of etherization, and believe that it is largely due to the complete relief of respiratory strain and the abundance of air continually present and rapidly renewed in the pulmonary alveoli. Dr. Meltzer has aptly referred to it as a luxury of respiration. The even delivery of well-diluted ether vapor and the accurate control of its strength is probably also a factor. The coincident relief of strain on the circulation is especially striking in operations for exophthalmic goiter and in severe and prolonged operations of various kinds, especially in anemic or debilitated patients.

Since we have used insufflation anesthesia in our most serious cases, we have rarely needed the intravenous saline infusions which we use during or at the termination of the operation, if the pulse shows signs of weakness or there is a marked fall in blood-pressure. This is not because we have lost faith in the saline, nor yet because the type of cases has changed; but I believe that fewer cases show evidence of shock since insufflation has been used in just the class of cases that formerly called for stimulation.

The relief of strain on respiration and circulation necessarily means a similar effect on the central nervous system, and this is shown in the absence of postoperative depression and the rapid recovery from the effects of the anesthetic and the operation.

PNEUMONIA

Experimental and clinical evidence has shown conclusively that neither pneumonia nor bronchial irritation is caused by insufflation anesthesia. Our experience coincides with this view, for while there have been in our series six cases of postoperative pulmonary complications, three only could be considered as possible ether pneumonias, and in none of these do we believe that the insufflation was responsible *per se*. It will bear repetition in relation to this point that the cases of this series have included the most difficult and serious of a busy service in the heart of a great city, on which is thrown a large number of desperately ill patients.

As this question is of vital importance in judging the method, brief notes of these cases are given.

We believe that insufflation not only does not cause bronchial irritation or pneumonia, but that it acts as a preventive, first, in bad breathers who are more or less insufficiently oxygenated and under respiratory strain, and who are continually aspirating mucus and saliva, and, secondly, in operations about the mouth and pharynx, by preventing aspiration of blood and detritus. This is of the greatest benefit in excisions of the tongue or jaw and various operations of the mouth, nose and pharynx. Such operations are greatly simplified by the use of the method, and the necessity of ever having

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to resort to a preliminary tracheotomy is practically eliminated. In this respect pharyngeal insufflation cannot take the place of the intratracheal method.

Of the six cases of pulmonary complications, two have already been reported.[1]

The other four cases are briefly as follows:

CASE 1.—M. G., man aged 45 years, was operated on Oct. 12, 1912, for acute septic cholecystitis with extensive localized peritonitis and perihepatitis. Cholecystostomy was performed with prolonged drainage of gall-bladder and suppuration of wound. The abdominal wound broke open on the twelfth day. Right lower lobe pneumonia developed on the second day, signs persisting about five days. The patient recovered. While the pneumonia was in all probability a complication of the disease and not due to the anesthesia, ether pneumonia cannot be excluded.

CASE 2.—J. A., woman aged 25 years, Syrian, operated on Nov. 15, 1912, for tuberculosis of rib and thoracic wall, was emaciated and showed signs of pulmonary tuberculosis. Right lower lobe pneumonia developed twenty-four hours after operation; later the upper lobe was involved; there were defervescence and recovery after a sharp course of eight days. This was a case in which the administration of ether in any form was an error; the pneumonia was as likely due to the preliminary anesthesia as to the insufflation.

CASE 3.—G. B., man aged 64 years, was operated on Dec. 7, 1912, for extensive indurated mass in pyloric region of stomach, probably carcinomatous and ulcerated. A palliative gastro-enterostomy was done. There were signs of consolidation in the right lower lobe, first detected six days after operation. Death occurred from pulmonary abscess with surrounding zone of consolidation twenty days after operation. This case requires no comment as it was evidently a complication of the disease and not due to the anesthesia.

CASE 4.—P. G., man aged 35 years, was operated on Jan. 16, 1913, for obscure abdominal symptoms. A malformation of liver (diminutive right lobe), great hypertrophy of omentum, and chronic appendicitis were found; there was a good deal of manipulation in the region of the liver during exploration. The preliminary anesthesia in this case was unduly long and deep, lasting thirty minutes. The intubation was accomplished only after repeated trials; the anesthetist was a beginner. Right lower lobe pneumonia developed promptly, subsided after five days and the patient made a good recovery. The preliminary anesthesia in this instance was unquestionably responsible for the pneumonia.

We have had no laryngitis or loss of phonation; when it occurs it is probably due to the use of too large a tube or to trauma in intubating.

Sore throat with pain on swallowing lasting a few days has occurred in a number of cases, due always to direct trauma to the pharynx in intubating.

Vomiting is less than in ordinary etherization, and seems to depend largely on the length and degree of preliminary anesthesia required to produce sufficient relaxation for intubation, or on the nature of the illness itself.

In 141 insufflations observed since January 1 by our present intern anesthetist, Dr. White, thirty-two patients vomited once (22.7 per cent.), twenty-four vomited twice (17 per cent.), and six vomited several times (4.2 per cent.), a total of sixty-two (43.9 per cent.).

For positive pressure in thoracic operations it is fast supplanting other more cumbersome methods, as, in addition to the facility with which the degree of pressure can be controlled, the automatic ventilation of the lungs is of the greatest advantage. The far-reaching influence which intratracheal insufflation will have on the development of thoracic surgery in the near future is scarcely appreciated as yet. Heart and great vessels, lungs, bronchi and intrathoracic esophagus, are accessible and approached with increasing safety.

1. Peck, Charles H.: Intratracheal Insufflation Anesthesia, Ann. Surg., July, 1912, p. 193.

CONCLUSIONS

1. Intratracheal insufflation, administered with accurate control of the strength and amount of ether vapor, is a new principle in anesthesia which in certain classes of cases has many advantages over other methods.

2. The difficulty of intubating and the necessity of inducing full surgical anesthesia before this can be accomplished makes this a method unsuitable for many short, simple operations. Its use should be restricted to the cases in which it has special advantages.

3. It is absolutely safe both as to administration and freedom from deleterious after-effects if a proper apparatus is used and the simple precautions mentioned in detail are observed.

4. It is an ideal method of differential pressure for operations involving the opening of one or both pleural cavities, greatly reducing the danger of intrathoracic operations.

5. It greatly lessens operative shock: (*a*) through the absolute relief of strain on the respiratory apparatus and coincident freedom from strain on the circulatory apparatus and the central nervous system, and (*b*) from the even, advantageous degree of anesthesia maintained. This is especially evident in aged patients, in those cachectic from malignant disease or anemia and debilitated from other causes. The disparagement of ether as an anesthetic as compared to nitrous oxid, so popular of late among the advocates of the latter, is based on observations of faulty methods of ether administration rather than the inherent toxic effect of the drug itself. The wide margin of safety with ether has so long permitted abuse with this drug that faulty technic has been assumed by its opponents as customary in its administration.

6. It prevents aspiration of mucus or saliva, vomitus, blood or other foreign matter into the trachea, simplifying and decreasing the danger of operations on the tongue, jaws, mouth, nose or pharynx, preventing aspiration pneumonia, and practically eliminating the necessity of preliminary tracheotomy in such cases.

7. It is especially useful in operations about the head and neck. The anesthetist is out of the way; the operative field is easily kept sterile and obstruction of the upper air-passages is absolutely prevented. The same may be said of operations on the kidney, the spine and in awkward positions in general.

8. The degree of anesthesia is under perfect control. Overetherization is impossible at or below 21 per cent. by weight of ether vapor. Insufflation of pure air for the last few moments of the operation hastens the recovery of consciousness and minimizes the after-effects.

30 West Fiftieth Street.

Fly-Borne Typhoid.—C. E. Terry in the *U. S. Public Health Reports*, gives an account of the control of typhoid in Jacksonville, Fla., showing a marked reduction in the typhoid rate since the enforcement of rules requiring the fly-proofing of privies, the screening of sick-rooms in cases of typhoid, and the destruction of flies by poison or sticky fly-paper. He believes that the fly transmits infection through its excreta rather than by means of the specific bacilli carried on its feet from infectious material; also, that the fly bred in infectious material is a carrier for a longer period and hence more dangerous than the insect obtaining its infection through contact or feeding after maturity.

LOCAL ANESTHESIA *

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In 1907 at the meeting of the American Medical Association at Atlantic City, I presented a paper on local anesthesia and in the following year a report through the anesthesia commission on the extent to which it was used in this country. Since that time there have been important developments; the field has been broadened and the popularity of the method has increased both at home and abroad. It has seemed that a general review of this development might be of interest.

Probably the one greatest factor has been the introduction of novocain as a substitute for cocain. First clinically tested by Heinrich Braun in 1905 and extolled by him in several papers,[1] it has been generally adopted and is now recognized as the best and safest substance for the production of local anesthesia. It has the great advantage of being about seven times less toxic than cocain, and its solutions stand boiling. It is conveniently supplied in tablet form in combination with synthetic suprarenin. In preparing solutions these tablets are dissolved in 0.6 per cent. salt solution to which is added a little hydrochloric acid. For infiltration purposes 0.25 to 0.5 per cent. solutions are used and as much as 125 c.c. of the latter strength may be injected with perfect safety. Braun states that he has repeatedly used as much as 250 c.c. (1.25 gms.) of this strength and has never seen trouble therefrom, but cautions that we should in spite of this ever bear in mind that novocain is a poison. We can therefore infiltrate very extensively with no fear of toxic effect, a fact which accounts in large part for the extension of local methods into new fields.

Anesthesia is probably obtained somewhat more quickly with cocain and where small amounts only are necessary I still use it; but, for all larger infiltrations, novocain is the choice.

Urea and quinin hydrochlorid, suggested by Thibault and popularized by Hertzler[2] and others, is another anesthetizing agent which has proved of value. It has in its favor practically negative toxicity, its control of postoperative bleeding and the fact that anesthesia obtained by it may last for several hours or days, thus eliminating postoperative pain. It is thus well fitted for rectal work and is said to be especially useful in the removal of tonsils. The ordinary strength of the infiltration solution is from 0.5 to 1 per cent. Anesthesia is obtained slowly and one should wait at least fifteen or twenty minutes after the injection before beginning an operation.

In 1908 Bier[3] presented an entirely new method of obtaining anesthesia of the limbs through the medium of intravenous injection of novocain. The limb is rendered perfectly ischemic by the application of a rubber bandage from the periphery to a little above the point at which a vein is to be exposed. At the central edge of this expulsion bandage an Esmarch tourniquet is tightly placed over a broad surface. The expulsion bandage is removed and a handbreadth or so below the first tourniquet a second is applied. Between these two a vein is exposed, usually the internal saphenous in the leg and the cephalic, median or basilic in the arm. The vein is ligated centrally and a cannula introduced distally and tied in place. Novocain (0.5 per cent.) is then forced into the vein under considerable pressure—from 60 to 100 c.c. in the leg, 40 to 70 c.c. in the arm—the cannula is removed and the vein tied. In one or two minutes there is complete anesthesia in the area between the tourniquets—direct anesthesia—and in ten or fifteen minutes in the parts distal to the second tourniquet—indirect anesthesia. There is also complete motor paralysis; so that there is obtained as thorough relaxation as under general narcosis, rendering this method applicable for any operative procedure. The anesthesia persists as long as the central tourniquet is left in place and disappears quickly after its removal. Bier's longest operation lasted one and three-quarter hours. Hayward[4] in November, 1912, reports from Bier's clinic 375 operations under vein anesthesia; including amputations, joint resections, fixation of fractures, tendon transplantations, removal of varicose veins, etc. There was complete anesthesia in 93 per cent. and in only 3 per cent. was narcosis necessary. There were no accidents or bad results. Kaerger[5] from the same clinic reports 150 further cases and gives the details of the method as applied to minor operations on the hand and foot, a most useful procedure in office or dispensary work.

Undoubtedly venous anesthesia furnishes us a useful addition to our means of carrying out operations in non-septic conditions of the extremities, but the discomfort of the tourniquet is often a factor which must be considered.

Goyanes[6] in 1909 suggested a similar procedure except that he injected the anesthetic by means of a fine needle directly into an exposed artery. Ransohoff[7] in 1909-10 used a similar method, but did not exsanguinate before injecting. The intra-arterial method seems to show no advantages over the venous and has the disadvantage that arteries are more difficult of access than superficial veins.

A knowledge of sensory nerve-distribution renders easy the anesthetization of distal portions of an arm or leg by perineural or endoneural injection. Crile[8] in 1902 injected the several cords of the brachial plexus after exposing them. Hirschel[9] first obtained anesthesia of the whole arm by injecting the plexus in the axilla without incising the skin and Kulenkampff,[10] stimulated by his paper, has worked out a method by which he reaches the plexus above the clavicle. He gives anatomic details and reports twenty-five cases, in fifteen of which total anesthesia was obtained and in only three of which a little ether was needed.

For the leg Läwen[11] in 1911 presented the technic of reaching through skin punctures the various nerves so as to anesthetize the whole limb and in 1912 Keppler[12] published an extensive article with further details and

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

1. Braun: Deutsch. med. Wchnschr., 1905, xxxi, 1667; Deutsch. Ztschr. f. Chir., 1911, iii, 321; Lokalanesthesie, Edition 3, 1913.
2. Hertzler, A. E., Brewster, Roger R., and Rogers, Ford B.: Quinin and Urea Hydrochlorid as a Local Anesthetic, THE JOURNAL A. M. A., Oct. 25, 1909, p. 1393.
3. Bier: Arch. f. klin. Chir., 1908, lxxxvi, 1007.
4. Hayward: Arch. f. klin. Chir., 1912, xcix, 993.
5. Kaerger: Arch. f. klin. Chir., 1912, xcix, 983.
6. Goyanes: Rev. clin. de Madrid, 1909, i, 12; Zentralbl. f. Chir., 1909, xxxvi, 791; Zentralbl. f. Chir., 1911, xxxviii, 1660.
7. Ransohoff, J. L.: New Method for Inducing Local Anesthesia, Lancet-Clinic, Aug. 7, 1909; abstr., THE JOURNAL A. M. A., 1909, p. 741; Ann. Surg., 1910, li, 453.
8. Crile, G. W.: An Experimental and Clinical Research into Cocain and Eucain, THE JOURNAL A. M. A., Feb. 22, 1902, p. 491; The Results of Operations, Especially Abdominal, Performed on the Principle of Anoci-Association, ibid., July 13, 1912, p. 114.
9. Hirschel: München. med. Wchnschr., 1912, lix, 1218.
10. Kulenkampff: Zentralbl. f. Chir., 1911, xxxviii, 1337.
11. Läwen: Deutsch. Ztschr. f. Chir., 1911, iii, 252; München. med. Wchnschr., 1911, lviii, 1390.
12. Keppler: Arch. f. Chir., 1912, c, 501.

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reports of cases. Babitzki[13] quite recently described a method whereby the sciatic nerve can be reached at the foramen for direct endoneural injection, the needle being introduced through the gluteal muscles and controlled by a finger in the rectum.

Franke and Posner[14] contribute from the Heidelberg clinic in 1912 a study of the sensory nerves of the pelvis and perineum with the technic of reaching them by puncture. They report several perineal prostatectomies and in a footnote ten additional ones, all completed under absolute anesthesia.

Ruge[15] cites numerous vaginal operations and two complete vaginal hysterectomies accomplished painlessly under simple infiltration with novocain, and from Knight Smith[16] comes a report of two successful and painless cesarean sections by the same method. Läwen's method of paravertebral nerve-blocking, reaching the nerves at the spinous processes of the vertebrae, was applied by Finsterer[17] to abdominal work. He obtained perfect anesthesia in four out of six cases and recommends this procedure especially for removal of the appendix. Kappis,[18] applying the same method, has removed the kidney in three cases; Schumacher[19] recites thirty-five thoracoplasties and Heidenhain[20] four laminectomies. Kappis found that absolute anesthesia could thus be obtained for operations on the gall-bladder and stomach. This is of particular interest in showing that the vagus is not concerned with the sensory innervation of this region.

The head has been a special field of investigation. In the papers of Braun, Offerhaus[21] and Härtel,[22] not only are the methods of reaching the individual branches of the fifth nerve accurately mapped out; but even the injection of the gasserian ganglion itself is detailed with mathematical accuracy. All operations in the field of supply of the fifth nerve are done by preference under local anesthesia by these surgeons. Braun states that local anesthesia has made of resection of the upper jaw quite another operation, which may still have its horrors and its difficulties but has quite lost its danger; that patients come through it with absolutely no collapse and quite as fresh as before it began and scarcely need to go to bed. Of ten patients he has lost none and had no pulmonary complications. Härtel reports nine cases in equally glowing terms.

Excision of the tongue or lower jaw comes under the same category. Härtel's brilliant article,[23] published in December, 1912, details the anatomic approach to the gasserian ganglion by needle puncture and its reading would well repay any one interested either in the subject under discussion or the injection treatment of tic douloureux. The ganglion is reached through the foramen ovale and injected with 1 c.c. of 2 per cent. novocain-suprarenin solution. Anesthesia is obtained almost immediately and lasts about an hour and a half. Härtel reports sixteen operations in which he has used this method, in nine of which the ganglion was injected on both sides. The operations included six resections of the upper jaw, three of the lower jaw and two of the tongue. Besides these there were fourteen patients in whom the ganglion was injected with alcohol. In all there were thirty-nine attempts at puncture of the ganglion, of which he reports twenty-eight as easy, seven difficult and four with no anesthesia obtained, so that the ganglion was probably not reached.

The neck had long been a favorite situation for work under local anesthesia and the accomplishments of Bier, Kocher and others are well known. The progress in this field in the last few years is along old lines, but the possibilities have been greatly increased by the introduction of novocain because of the enormous amount of the solution which can be used. Braun reports, that from 1908 to 1911, his 150 thyroidectomies have without exception been done under local anesthesia.

To one accustomed to the use of cocain administered as sparingly as possible, it is surprising how simple and painless these operations become with the generous novocain infiltration as recommended by Braun. The third edition of his book on local anesthesia, just published in the last few weeks, is a storehouse of interesting and wonderful descriptions of the conquest of sensation in all parts of the body. The technic of the injections for various operative procedures is given in detail, illustrated by charts and photographs in such a way as to make a practical working guide.

The work of Crile on shock and anesthesia has been of great value. Showing that shock has as its basis a definite injury to nerve cells, he has sought to lessen this by interrupting the conduction paths between the brain and the field of operation, a principle which he has designated "anoci-association." The three factors concerned are hemorrhage, anesthesia and trauma, of which the latter two are the most difficult to control. The influence of trauma, he finds, can be obliterated by blocking the conduction paths by means of a liberal infiltration with 0.25 per cent. novocain. Bloodgood[24] indorses and confirms Crile's work and urges surgeons to familiarize themselves with the technic by applying it not only to the handicapped patient, to whom it may be the deciding factor of safety, but in daily routine work. He believes this will also add to the comfort of the ordinary individual who can stand considerable operative trauma and bad anesthesia. Bloodgood states that only by the aid of the sphygmomanometer can the surgeon estimate the real significance of the traumatic factor. He finds that there is no change in blood-pressure in operations under local anesthesia so long as no pain is inflicted; and familiarity with recent methods should enable one to obtain a painless operative field in the vast majority of cases. Braun's description of excision of the upper jaw or tongue is a striking example of the protection against shock which local methods afford. As he says, the patients scarcely need to go to bed.

Nowhere is this better exemplified than in surgery of the aged. How many individuals cannot any one of us recall who have been refused the possible benefits of surgery because of age? We can all remember epitheliomas of the lip, in which the lymph-nodes have not been removed, because it was not thought wise to prolong anesthesia; fractures which have been left to vicious or no union; or hernias doomed to the uncertain protection of a truss and the dangers of strangulation. In these cases a mastery of local methods means safety, and by a judicious combination of local anesthesia with a little nitrous oxid at crucial moments the possibilities are without limit.

The removal of cervical lymph-nodes in epithelioma of the lip is so painless as to cause no disturbance what-

13. Babitzki: Zentralbl. f. Chir., 1913, xl, 227.
14. Franke and Posner: Arch. f. klin. Chir., 1912, xlix, 139.
15. Ruge: Zentralbl. f. Gynäk., 1912, xxxvi, 561.
16. Smith: Surg., Gynec. and Obst., 1910, xi, 423.
17. Finsterer: Zentralbl. f. Chir., 1912, xxxix, 601.
18. Kappis: Zentralbl. f. Chir., 1912, xxxix, 249.
19. Schumacher: Zentralbl. f. Chir., 1912, xxxix, 252.
20. Heidenhain: Zentralbl. f. Chir., 1912, xxxix, 281.
21. Offerhaus: Arch. f. klin. Chir., 1910, xcii, 1.
22. Härtel: Verhandl. d. deutsch. Gesellsch. f. Chir., 1911, i, 243.
23. Härtel: Arch. f. klin. Chir., 1912, c, 193.

24. Bloodgood: Progr. Med., 1912, iv, No. 4, p. 207.

ever. My routine is to infiltrate the neck thoroughly with 0.5 per cent. novocain and then proceed with the excision of the growth on the lip. By the time this is finished and the gloves changed, anesthesia in the neck is so well established that the dissection can be carried out at will. I have done this on a man well along in the eighties and had him walking about next day. In a man of 97 I removed a large epithelioma of the cheek involving the zygoma. This was especially interesting in that a section of Steno's duct was removed and an end-to-end suture made with resulting patency of the duct. The operation lasted nearly two hours and was followed by no shock or depression.

In the treatment of fractures the combined method has been found most useful. Thus in a feeble old lady of 85 with a long, oblique fracture of the shaft of the left femur with great displacement, I was able to expose the bone under infiltration anesthesia. She was then given a few whiffs of nitrous oxid and the fragments brought into line. During the drilling of the bone and the application of the plate, she was conscious and talking, but felt no pain. She was gotten up in a chair the next day and left the hospital in six weeks walking and without crutches or cane.

In hernia operations, I do not consider old age a contra-indication. Hernias of all varieties, I believe, are best done under local anesthesia; and, except in very young children, I recall no case in which it has been necessary to resort to narcosis in the last few years. My oldest patient, a man of 98 with a strangulated inguinal hernia, was operated on over a year ago, the bowel in good condition. He made a good recovery and is now pursuing his work as an artist. In a woman of 84 with an eight-day strangulated hernia with gangrenous small intestine, a two-stage operation was done. The bowel was first brought out and opened, and on the following day her condition was so good that a resection and Murphy button anastomosis was made. Her recovery was uneventful.

In presenting this review of the literature of the last few years, I have by no means exhausted or done justice to the material, but have tried to give some idea of the general progress. I have endeavored to point out some of the possibilities and to show the degree of perfection which can be obtained by such skilled masters as Braun, Bier, Härtel and others.

In this busy American life of ours, I cannot believe that many of us will ever take the time or have the patience to attain that degree of skill. I hope, however, that some of us may persevere and be rewarded by finding how much ease comes with experience. As Bloodgood states, in speaking of Crile's work, the technic cannot be mastered by restricting its employment to handicapped patients, who are too few to give sufficient experience. The details should be learned by daily experience where absolute success is not so imperative. Above all, I trust the method will not in the future be condemned, as it has been in the past, because of ignorance of its possibilities and inexperience in its application.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. HERR, SLOAN, PECK, MITCHELL AND BOOTHBY

DR. CARROLL W. ALLEN, New Orleans: As early as 1889 Dr. Matas introduced a method for reaching the second division of the fifth nerve by passing the needle into the orbit, hugging the bone at the lower external angle and directing the needle slightly inward. It enters the sphenomaxillary fissure, passes backward a distance of 5 cm., in the orbit of an adult, and then is exactly under the foramen rotundum. I have used this method for blocking the second division of the fifth nerve. I have had ten or twelve cases in which the entire jaw was removed. When the needle is passed 0.25 cm. further back, it reaches the third division of the nerve. The methods introduced by Offenhaus and by Härtel exemplify the more notable progress made in this field lately. Härtel produces a small area of anesthesia on the cheek and introduces a needle about 5 cm. in length upward, forward and backward.

DR. KARL CONNELL, New York: I believe that the use of alkaloids before anesthesia is entirely unnecessary unless one is using an anesthetic like nitrous oxid. I do not believe that nitrous-oxid-oxygen anesthesia is preferable to ether. The results, so far as Gwathmey and I have gone, show quite the contrary. The ether blocks shock far better than pure nitrous oxid. Intratracheal anesthesia is one of the most highly advanced methods now in use. It causes beautiful oxygenation, carries the patient without shock and permits positive pressure, if desired, and the highest degree of artificial respiration; but the chief advantage in the average case is that it permits one to carry the anesthesia absolutely on the lowest percentage for that particular person and that particular type of operation. As Dr. Boothby said, one can carry along the anesthesia for hours, possibly days. Ether percentage has come to be an important factor in giving an anesthetic, because it is desired not only to put the patient to sleep promptly, but to keep the patient asleep for as long a time as necessary, even hours, with the use of a minimum amount of ether. The level, as it is called, should be maintained in every case. When the operation is completed, the patient should wake up promptly; in fact, he should be practically out of the anesthesia.

DR. EVARTS GRAHAM, Chicago: We have learned that ether is perhaps indirectly responsible for some of the various postoperative or postanesthetic complications with which we are familiar, such as thrombosis, embolism, various lung complications, shock and acute dilatation of the stomach. It should be further desirable to attempt to devise an arrangement by which the ether will maintain its toxic action on the body the shortest possible time. This concerns also the problem of elimination of ether. Even after a short ether anesthesia the smell of ether may be detected in the breath of the patient for a number of hours afterward, so that even under ordinary circumstances ether is slowly eliminated from the body. Now, if we desire to increase the rapidity of elimination of ether from the body, we must consider first of all the channels by which it is normally eliminated. Ether is eliminated in large quantities through the lungs. It also gains entrance to the alimentary tract. The vomitus even after a short anesthesia smells strongly of ether. The ether also escapes through the skin, and part of it gets back into the alimentary tract and is reabsorbed. A period of hours is necessary to eliminate all of the anesthetic from the body. If we can step in somewhere on this circle and drive out the ether in some other way than occurs naturally, we may prevent some of these distressing postoperative complications. The fact that ether is more soluble in fat than it is in water is evidence that such a process can occur; by placing fat in the alimentary tract we can hold the ether there and prevent its absorption from the intestine. If two dogs of the same weight are given through a stomach-tube the same amount of ether, in one case diluted with the same amount of water, and in the other with an emulsion, the dog which receives the ether and water, if it does not vomit up the mixture, becomes deeply anesthetized, often sufficiently to kill it, whereas the dog which receives the mixture of ether and fat not only does not vomit, but is in no wise affected by the ether. This shows conclusively that the fat has prevented the absorption of the ether. Advantage has been taken of this fact in the clinic. For the last year or two I have administered fat in the form of olive oil after the anesthetic was stopped. I found that not only is the postanesthetic period shortened, but there is also less vomiting, in

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spite of the statements to the contrary which one occasionally finds in the literature, based on mere conjecture and not on experimental proof.

DR. HARRY G. SLOAN, Cleveland: The experiments carried out by Crile and Prendergast were as follows: Ten dogs were taken in each of two groups. The first ten were given ether, and shock was produced by rubbing the peritoneum for three hours. The second group were given nitrous oxid, and shock was produced in the same manner as in the first group. Blood-pressure tracings were taken to determine the reaction. The ether dogs showed at the end of three hours an average blood-pressure of 10 mm. of mercury, whereas the nitrous oxid dogs showed a pressure of 110 mm. of mercury. Surely a great difference! The ether was given by the open drop-method, not the intratracheal method. I do not see that there is any great difference in the method of administration, for anesthesia occurs only when the blood-stream contains a certain percentage of ether. In shock, the brain transforms its latent energy into nerve impulse in response to traumatic stimuli; its cells become exhausted. Ether anesthetizes by lipoid solution. Nitrous oxid anesthetizes by inhibiting the intracellular use of oxygen, so that we have two directly contrary principles at work. Under nitrous oxid the functional activity of the nerve-cell is curtailed; hence exhaustion is much more slowly reached than under ether when oxidation is normal.

VACCINE THERAPY FOR GENERAL PRACTITIONERS *

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The first record[1] of induction of active immunity for therapy was about two hundred years ago when it was learned that the orientals were practicing immunization against small-pox by means of inoculation of a little small-pox virus under the skin. From this rather hazardous procedure developed the use of the less dangerous and milder virus of cowpox by Jenner[2] in 1796. The next work of importance was that of Pasteur,[3] who developed a mild and at the same time an immunizing attack of anthrax by inoculating animals with anthrax bacilli which had been grown at a temperature of 43 C. (109.4 F.). Since this advancement many different methods of active immunization have been developed. These methods have been well classified by Bolduan[4] as follows:

1. *Living Cultures of the Virus:* Usually the cultures are attenuated, but there are some exceptions. A number of different methods have been employed for the attenuating of the virus, thus: by drying, as is done with the rabies in the Pasteur[5] treatment; by growing the virus at a temperature that is unsuited to the development of virulence, as is done in the case of anthrax;[3] by passing the virus through a less susceptible animal as is done in small-pox;[2] by means of chemicals such as the addition of iodin to diphtheria toxin, as was formerly done by von Behring;[6] or by means of heat as was formerly done with diphtheria toxin.

2. *Dead Cultures of the Virus:*[7] The cultures can be killed by heat or by the use of chemicals.

3. *The So-Called Combined Method:* This consists of first administering a dose of the specific immune serum and subsequently the virus. This method has been used in typhoid, cholera and plague.

4. *The Products of Autolysis of Cultures:*[8] These have been used in diplococcus meningitis and in typhoid, and seem to possess certain advantages over native cultures.

5. *Combinations of Preceding Methods:*

CHOICE OF METHOD

The choice of the various methods of immunization depends on the nature of the virus, and has been decided for us by research workers from time to time. For small-pox we use with perfect confidence a virus that has been passed through the less susceptible cow and purified. For diphtheria we also use with perfect confidence an immune serum. For typhoid we use dead cultures of typhoid bacteria, and for anthrax we use living cultures of anthrax bacilli grown at a high temperature. The reasons for a choice arise from certain particular facts of immunity, and their discussion is out of place in a paper of this character.

IMMUNITY BY MEANS OF BACTERIA KILLED BY HEAT

The interest in this work has been much stimulated during the last few years by the work of Wright.[9] Indeed, it has been activated to such an extent that many drug firms are marketing preparations of uncertain composition and action.[10] These vaccines are all of the stock variety, and are at best inferior preparations. As a rule the instructions for administration are inaccurate or incomplete. For these reasons much negative harm may be done to the patient by the use of too small a dose, or by use of an improper vaccine. Also much positive harm may accrue from the use of too large a dose.[11] There is surely necessity of using a vaccine that is beyond question one of the highest efficiency, and it is needful to administer such a vaccine in a proper manner. There is no exaggeration in the statement that more painstaking care is required in the management of a vaccine case than is required in the management of a case of broken cardiac compensation. In both cases the amount of the dosage of vaccine in one case, and of digitalis in the other, must be regulated by the clinical effect on the patient, and it is just as impossible to foretell the dose of a vaccine required as it is to foretell the amount of digitalis necessary to act, and not overact, without knowledge of and experience with vaccines.

PREPARATIONS OF VACCINES[12]

The first rule in the preparation of a vaccine is this: An autogenous vaccine is always more desirable than a stock vaccine. A stock vaccine may be of no value whatever in the production of immunity in any given case. Even when a number of different strains are used in the preparation of the vaccine, it is most often markedly inferior to autogenous vaccines. If there were certainty that the infecting organism were of the same strain as the one used in the preparation of the vaccine, then such a stock vaccine would approach the efficiency of the autogenous vaccine. Unfortunately many of the most common bacteria differ in different strains in the production of immunity as much as the bichemical char-

* From the Department of Clinical Pathology, Cornell University Medical College.

1. Bolduan: Immune Sera, p. 169.
2. Jenner: An Inquiry into the Cause and Effect of Variola Vaccina, 1796, iv, 75.
3. Pasteur, Recherches sur l'étiologie et la prophylaxie de la maladie charbonneuse, Rec. de Méd. Vét., 1879, No. 6, vi, 193.
4. Bolduan: Immune Sera, p. 171.
5. Pasteur, Le traitement de la rage, 1886, p. 4.
6. Von Behring: Die Blutserumtherapie, G. Thieme, Leipsic, 1892.
7. Metchnikoff: L'immunité dans les maladies infectieuses, Paris, 1901
8. Wright: Brit. Med. Jour., Jan. 30, 1897.
9. Wright: Lancet, London, December, 1900; March 2, 1901; Sept. 14, 1901; March 29, 1902.
10. Articles on Vaccine Therapy, editorial, THE JOURNAL A. M. A., April 26, 1913, p. 1306.
11. Allen: Vaccine Therapy, p. 112.
12. Wright: Lancet, London, March 29, 1902.

acteristics of bacteria of different species differ. It is always best, therefore, when preparing a vaccine, to use a culture from the disease of the patient himself. If, however, it is impossible to obtain an autogenous growth, the best chance of good results is in the use of a freshly made vaccine from a strain of the causative bacteria, in cases this may be taken for granted as in furunculosis.

To prepare an autogenous vaccine, it is first necessary to obtain a pure culture of the infecting organism. If there is any doubt that the organism grown is the organism causing the disease, then it is necessary to do a complement-fixation test,[13] using the bacteria grown as the antigen. Having obtained a good growth of the disturbing organism, a twenty-four-hour culture is washed off in sterile 0.9 per cent. saline solution. It is best to use slanted mediums for the cultures to facilitate the washing off of the bacteria. This saline emulsion of bacteria must be sterilized, standardized and prepared for dispensing before the vaccine can be given to the patient.

Standardization.—The following apparatus and reagents are necessary: capillary pipet made by drawing out heated glass tubing, clean glass slides free from grease, wax pencil, a polychrome blood-stain and distilled water.

The saline emulsion of bacteria is centrifuged for a few minutes to free it from those bacterial clumps that are not broken up by shaking well. About ½ inch is marked off on the capillary tube with the wax pencil, and blood from a fresh prick on the worker's finger is drawn up to this point. A tiny air-bubble is next drawn in, and then the centrifuged emulsion is drawn up to the mark. This gives us in the capillary pipet equal portions of blood and bacillary emulsion separated by a tiny air-bubble. The capillary pipet is next emptied on a clean glass slide, the contents mixed thoroughly, and spread evenly over the surface of the slide by means of the edge of another slide. The slide is dried and stained with the stain,[14] in the same manner as for blood-smears. The relative number of bacteria and red blood-cells is then estimated by counting at least 500 red cells and all the bacteria found while counting them. In this way it is easy to compute the number of bacteria per cubic centimeter, remembering that there are 5,000,000 red cells per cubic millimeter. Example: If while counting 500 red cells, 100 bacteria are found, the problem is stated as follows:

$$500 : 100 :: 5{,}000{,}000 : x$$
$$x = 1{,}000{,}000$$

Therefore, there are in the bacillary emulsion 1,000,000 bacteria to the cubic millimeter, 1,000 million to the cubic centimeter.

Sterilization.—The emulsion is best sterilized by submerging the bottle containing the now standardized saline emulsion of bacteria in a water-bath at a constant temperature of 60 C. (140 F.) for one hour; 0.25 per cent. (1 capillary drop for 10 c.c.) compound solution of cresol is then added to keep the vaccine free from contamination. Such vaccines are best dispensed in 30 c.c. colored glass bottles, stoppered with rubber caps, so constructed that a hypodermic needle can be forced through, and that, by inverting the bottle, the required amount of vaccine can be drawn into the syringe. The rubber caps should be kept wet with pure compound solution of cresol.

13. Swift, Homer F., and Thro, W. C.: A Study of Streptococci with the Complement-Fixation and Conglutination Reactions, Arch. Int. Med., January, 1911, p. 24. Schwartz and McNeil: Am. Jour. Med. Sc., 1911, cxli, 693. Hastings, Thomas W.: Complement-Fixation Tests for Streptococcus, Gonococcus and Other Bacteria in Infective Deforming Arthritis and Arthritis Deformans, THE JOURNAL A. M. A., April 19, 1913, p. 1208.

14. Allen: Vaccine Therapy (See Index-dosage).

DOSAGE

The dosage of a vaccine is of utmost importance, and the following rules will be of help:

1. The first dose, and the first dose only, is to be decided arbitrarily.

2. The second dose and all succeeding doses must be regulated by the effect of the first dose. Nothing can be more dangerous than an arbitrary increase of the dose of vaccine regardless of the clinical effect of the preceding dose; for two small a dose may be of no value whatever, and too large a dose may diminish instead of increasing immunity.

3. A marked local reaction at point of inoculation following the dose and accompanied by increased severity in the symptoms of the disease and slight or no improvement in the condition of the patient before time for the next dose, indicates that too large a dose has been given. The patient should be through the so-called negative phase by the end of the second day. When the dose is too large the negative phase is too severe and too long.

4. Slight local reaction following the injection, and accompanied by slight or no increased severity in the disease and followed by no improvement in the condition of the patient, indicates that too small a dose has been given. When the dose is too small there is no negative or positive phase clinically.

5. Slight or no local reaction accompanied by moderate, slight or no increase in the severity of the symptoms of the disease and followed by improvement in the condition of the patient indicates that a correct dose has been administered. After such a dose the negative phase is usually of about twenty-four hours' duration, but may be entirely absent. After the negative phase improvement in some or in all of the symptoms should begin, which is the beginning of the positive phase.

6. The second dose after a correct dose has been given should not be given until the negative phase has been well passed. This is usually within from two to four days. In acute illnesses it is well to begin with small doses which are followed by transitory negative phases, when it is possible to give a second dose within from twenty-four to thirty-six hours. In chronic disease it is safe to give much larger doses with the risk of severe negative phases, but in such cases it is necessary that the doses be given not too frequently. The interval between the doses should be increased or diminished in direct proportion to the severity and duration of the negative phase, and the duration of the positive phase, or period of betterment. The amount of increase or decrease in a dose is determined by the negative phase also, but inversely. A severe or prolonged negative phase indicates a longer interval and a smaller dose. It is well to be conservative, and so long as a certain dose produces adequate response, it is advisable not to increase it rapidly even though a larger dose can be given without a too severe negative phase. It is always well to err on the side of too small a dose and too long an interval. In the department of clinical pathology in Cornell Medical College, clinical symptoms have been found of most value in directing the dosage of vaccines.

INDICATIONS FOR VACCINE TREATMENT

As a general rule it can be said that all chronic bacterial disease can with advantage be treated by means

15. Hastings: Oral communication.

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of vaccine. Many acute diseases can be added to this list. Allen[16] asserts that there is benefit in nearly every type of known infection. The following is a list of the bacteria that have been advantageously employed in vaccine treatment:

Staphylococcus.—These bacteria differ much in species (*aureus, citreus, albus*) and little in different strains of the same species,[17] so an autogenous vaccine is not always necessary. The staphylococcal diseases treated by vaccines are boils, carbuncles, abscesses, periostitis, osteomyelitis, septicemia and pyemia. The staphylococcus is often a secondary infection in many diseases, such as acne and tuberculosis, and in such cases staphylococcal vaccine should be used in addition to the specific organism. The initial dose of a staphylococcus vaccine in acute conditions is usually from 20 to 50 millions, and in chronic conditions from 100 to 250 millions. The dose may often be gradually increased to an enormous amount such as 10,000 millions.

Streptococcus.[18]—Like the staphylococcus, the streptococcus is found in different species, but unlike the staphylococcus each species differs much in different strains and an autogenous vaccine should be prepared. Abscesses, cellulitis, septicemia, pyemia, erysipelas, recurrent tonsillitis and various joint affections have been treated by means of streptococcus vaccines. The pyogenic, hemolyzing and the green-producing streptococci differ much and should never be used interchangeably in vaccine therapy. The dosage is about one-fifth or one-tenth of that for similar conditions in staphylococcal infections.

Gonococcus.[19]—Torrey[20] and Schwartz and McNeil have done the most work with this organism. After much painstaking experimentation Torrey isolated two strains of gonococcus which have more immunizing effect than other strains. These strains he calls Strain A and Strain C. On account of the difficulty of obtaining an autogenous growth it is advised that these or similar strains be used in the preparation of vaccine for gonnococcus disease. There are no more brilliant results in vaccine therapy than those found in the treatment of gonorrheal arthritis. An initial dose of 20 millions is given and increased according to the clinical results.

Colon Group[21] (including typhoid).—General infections and especially pyelitis and other local infections caused by these bacteria have been benefited by vaccine treatment. Abundant evidence has been furnished by the British and American armies as to the value of these vaccines in the prophylactic treatment of disease.

Tuberculosis.—Practically every type of tuberculous infection has been treated with vaccine in the form of tuberculin, with different results in the hands of different men.

Pneumococcus.—There is no certainty that vaccine is of benefit in lobar pneumonia, but in the chronic pneumococcus infections good results are accomplished. Especially is this true of empyema.

Other bacteria that have been used in vaccine treatment to advantage are Pfeiffer's[18] and Friedlander's[16] bacilli and the bacilli of rhinoscleroma[22] and acne.

Much valuable work has been accomplished in the prophylaxis of plague[23] and cholera[24] and typhoid by immunization with their respective vaccines. The technic is the same for plague and cholera as for typhoid immunization.

Vaccines are for one purpose only, that is, to produce prophylactic immunity and to increase the resistance of an individual by active immunization, and they should never be used to the exclusion of other methods of treatment that tend to limit the extent of an infection. Abscesses should be drained, diet and hygiene must be considered, and vaccines must be recognized as very valuable adjuvants in combating infection.

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16. Allen: Vaccine Therapy.
17. Wright: Studies in Immunization, p. 203.
18. Emery: Immunity, p. 362.
19. Cole and Meakins: Bull. Johns Hopkins Hosp., 1907, p. 223. Irons, E. E.: The Treatment of Gonococcus Arthritis by Injections of Dead Gonococci, and the Clinical Reaction Which Follows the Injections, Arch. Int. Med., May, 1908, p. 433.
20. Torrey: Jour. Med. Research, 1907, p. 329.
21. Allen: Vaccine Therapy, p. 241. Wulff: Presse méd., 1910, p. 97.
22. Thro: Proceedings New York Path. Soc., 1910.
23. Haffkine: Gov. Rep., 1905, p. 73.
24. Haffkine: Immunity Against Cholera, Thacker Spink & Co., 1895, p. 66.

GENERAL ANESTHESIA IN THE SURGERY OF CHILDHOOD*

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A presentation of the subject of general anesthesia in children has become an annual occurrence of the Section on Diseases of Children of the American Medical Association, and should be a valuable one if it does nothing more than recall to mind the constantly active factor that narcosis constitutes in the morbidity and mortality of childhood's various surgical procedures. In addition to thus refreshing the hearer's minds, it adds from time to time record of the advances that have been made in the technic and practicability of the art, and acts as an incentive to further investigation and study.

The specialist in anesthesia, as in every other branch of surgery, brings forth that which is ultrascientific, often complex, not that he so far lacks in common sense as to expect every practitioner to adopt it, but that, having the ideal in mind, the general standard may be elevated.

Several important physiologic differences between adult and child bear on the subject of general anesthesia. The pediatrist knows them well, but he may not connect them practically with the question of surgical procedure and narcotics. The physical inferiority of evolutionary childhood in terms of resistance makes the young subject especially sensitive to the toxemia of so grave an interference with nature as the administration of a chemical poison to produce loss of consciousness. Despite the presence of what might be considered as healthy life functions, there is in children a marked absence of that acquired immunity which adults attain through contact with their environment. In this light the child has a small physiologic factor of safety.

The proportion of heat-radiating surface to body-weight is much greater than in the adult; the heat-regulating nervous mechanism has not developed to the high plane of efficiency found later in life. Sudden or great loss of heat becomes relatively a much more serious factor. The total volume of blood in the circulatory system of the child is small, so that comparatively minor losses become relatively more serious and dangerous. The general circulatory efficiency and blood-pressure depend more completely on cardiac action, and less on a well-developed peripheral propulsive factor than in

* Read in the Section on Diseases of Children of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

the muscular adult, so that slight interference with the cardiac action draws immediately on the margin of safety of the child.

The nasopharynx is distinctly smaller in relation to extraordinary respiratory needs[1]; its sensitive lining mucous membranes are easily stimulated to abundant secretion of mucus and its musculature to spasm, particularly about the glottis (recall the glottic occlusion of catarrhal croup and laryngismus stridulus). In the presence of lymphoid hyperplasia these obstructive and exudative factors are multiplied a hundredfold.

In children poorly understood dyscrasias exist, such as the condition called status lymphaticus, the thymus persists, and mechanically, as well as by its hypersecretion, makes for lessened resistance to the toxemia of anesthesia.

When serious accidents do occur in general anesthesia, in the majority of instances it is directly or indirectly the result of carelessness, the confidence of inexperience, or where familiarity has bred contempt and neglect.

It occurs in every discussion of the matter, as it does in literature, that many men see no sense or need for the general warning against chloroform, and especially not in the case of children. Reports such as that of

Fig. 1.—Vaporizing bottle set up for tracheal insufflation. *A*, electric motor pump; *C*, foot-pump; *D*, tracheal tube and forceps for introducing; *E*, third bottle of vaporizer used as mercury safety valve.

Grayson[2] of three thousand eight hundred chloroform anesthesias in nose and throat work without a death or serious collapse, prompt the promiscuous selection of this drug for such work without giving due weight, in considering the favorableness of the report, to the individual care and expertness which allowed the successful results reported. We all have considerable ego and easily conclude that we can do as well.

Chloroform has special advantages when used for children, and particularly in nose and throat work. These advantages prompt its selection by many, even in the face of its relatively great toxicity: 1. It is comparatively safe in the warmer climates. 2. It causes little, if any, increase of the nasopharyngeal mucus in cases in which such mucus dangerously adds to the respiratory obstruction which the operative manipulation inevitably produces. 3. It maintains an anesthesia for a longer period of time after the removal of the cone than does any other agent we employ—this is an advantage to the surgeon. 4. It is easy to carry and practical to administer. Despite all these advantages, however, the well-known and repeatedly demonstrated toxicity of the drug compared with others, makes it an agent to be avoided, and particularly so by the very ones who use it most, namely, the inexperienced, occasional users.

1. Brailsiia, W. C.: Tr. Am. Otol. Soc., 1909, xi, part 2.
2. Grayson: Laryngoscope, 1913, xxiii, 61.

ERRORS OF TECHNIC THAT HAVE CONTRIBUTED TO AND CAUSED HIGH MORTALITY AND MORBIDITY, ESPECIALLY IN ADENOID AND TONSIL REMOVAL

Passing with mere mention the general necessity for minimum dosage of anesthesia and extreme care of administration with children, one comes to an analysis of the technical errors which cause damage or fatality in the usual anesthesia.

In the case of chloroform, its special toxicity has been mentioned, but the error of administration which renders the toxicity active in the hands of the inexperienced has most often, according to my observations, been the continuous dropping, if not pouring on the mask, of the chloroform during the period of apnea, caused by a half voluntary holding of the breath, a spasm of the glottis, or an obstruction in the pharynx from blood and mucus. During this period of apnea the chloroform is collecting in large concentrated dose under and around the mask, lying in wait, so to speak, for the period of hyperpnea which will succeed the apnea, so that with this period of hyperpnea or deep, exaggerated breathing, the toxically concentrated and large volume of drug is sucked into the lungs with resultant paralysis of the central respiratory mechanism. His threshold for stimulation being so lowered by the overdose of drug that the normal stimuli fail to maintain their influence, and death occurs.

In the case of ether, with its relatively slight toxic effect on the vital nervous mechanisms, the local irritant influence becomes active in producing an exudate of mucus or spasm of the glottis, the which, being greatly exaggerated in cases of lymphoid hyperplasia, becomes, in conjunction with the operative manipulations, a serious source of obstruction to breathing. This obstruction to breathing produces a marked degree of asphyxia in the subject for adenoid or tonsil removal, and at the same time prevents the further inhalation of the anesthetic. Recovery from the anesthetic prompts the anesthetist to apply large, concentrated dosage in order to subdue the patient and in virtue of this irritating dose the state of mucus exudation and pharyngeal spasm is again instituted. Thus is established a vicious cycle of too superficial anesthesia on the one hand, with obstructed breathing and damaging asphyxia on the other. Obstructive apnea alternates with overconcentration and overdosage, and gives an anesthesia than which there could be no more perfect for the inconvenience of the surgeon or more detrimental to the child.

At first glance this condition might seem to apply to cases in which surgery of the throat alone is in question, but the observation of any intelligent anesthetist or surgeon will demonstrate its existence as a cause of trouble in many anesthesias in children. The use of the drop technic in children on an open mask or covered with towels focuses every element of the danger that lies in its abstraction of heat or refrigeration on a subject the least able to withstand bronchial exposure or loss of bodily heat. The virtue of its comparative safety is swallowed up in the risk of its refrigeration. The only excuse for the use of any direct application of the

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liquid ether to the subject's airway is ignorance on the part of the anesthetist or sacrifice of patient's welfare to the convenience of the surgeon.

If there be any truth in Crile's observations on toxic nerve assault or anoci-association, we have good theoretical reasons to add to the frequent practical demonstration, that the extreme fear which accompanies many inductions of anesthesia does real damage to the subject's central nervous system and may have considerable influence in instances in which sudden anesthetic collapse occurs. In some cases a child may be anesthetized while asleep, but more often some speedy, sure technic must be adopted to shorten the seconds of agony for parent and subject. For this purpose no doubt nitrous oxid, properly administered, is superior, all things considered, the exception being in very young infants in whom the few drops of chloroform necessary to produce the desired result are less to be feared than the gas. Perfume, or 25 per cent. essence of orange, on the mask, prior to the chloroform, has its advantages.

The preponderance of narcoses in operations for adenoids and tonsils in children and the many difficulties encountered by anesthetists and surgeons in securing satisfactory anesthesia, make its consideration a factor of some consequence. Recently, French[3] has reported some investigations on anesthesias in throat work in children and during the use of the upright position has sought to attain the most satisfactory narcosis with the gas-ether sequence, Dawbarn's sequestration anemia, and an oxygen vapor of ether administered through a mouth tube during the operation and at intervals. The work of the operator is of the slow, painstaking kind, and thoroughness is his watchword, so that the anesthesia is of importance. The nitrous oxid initiation is found wanting in the claimed difficulty of the transition from gas anesthesia to ether. The oxygen ether vapor during the operation is complained of as probably augmenting the bleeding. Nasal insufflation is suspected of damaging the accessory sinuses of the nose.

In opposition to these views I believe that a nitrous oxid initiation is of sufficient value to warrant the acquisition of the skill necessary for the smooth transition from gas to ether vapor, and that such skill can be easily acquired. Also that the marked practical and theoretical value of nasal insufflation through tubes introduced well into the pharynx prompts the selection of this technic and that insufflation so used offers little, if any, chance of damage to the sinuses of the nose. The vapor-delivering mouth-gag, the oral tube, and the nasal tube deliver the anesthetic vapor outside of the area of obstruction to breathing in adenoid and tonsil work and thus do not overcome the respiratory obstructive difficulties of this anesthesia. Where tubes are inserted well below the soft palate, positive pressure within the nasal cavity and damage to the sinuses are negligible factors. The anesthetic vapor is delivered well behind the obstructive difficulties in the upper pharynx and if a proper volume of air is insufflated, the excess in the form of outflow tends to force the blood and mucus forward in the mouth where sponges or suction pump can remove them.

There are two operations especially that are performed on children in which the operator and patient are so handicapped by the mechanical question of anesthesia that I am certain that many deaths result directly because of the anesthetic. These two procedures are for sarcoma of the maxillae, especially the superior, and cleft palate. In both operations long periods of asphyxia are produced by the mechanical manipulation within the subject's airways, and in sarcoma of the superior maxilla especially from the hemorrhage that is bound to occur even with ligation of the external carotid.

3. French, T. R.: New York Med. Jour., 1913, xcvii, 1061.

INTRATRACHEAL INSUFFLATION ANESTHESIA

Tracheal insufflation anesthesia in children is especially easy of performance and offers such perfect anesthesia without one moment's anxiety for asphyxia or inhalation of blood and mucus, that any surgeon who operates once with its aid certainly would never attack a similar operation without it. The blood and mucus are actually washed out of the nares by the return flow of air, and the constant pink color of capillary circulation testifies to the complete oxygenation; the surgeon's work is not interrupted by the intermittency of the narcosis and the subject does not run the gauntlet of dangers from improperly maintained, recklessly toxic anesthesia.

In children the glottis is easily reached by the guiding index-finger of the left hand, the rubber catheter (18

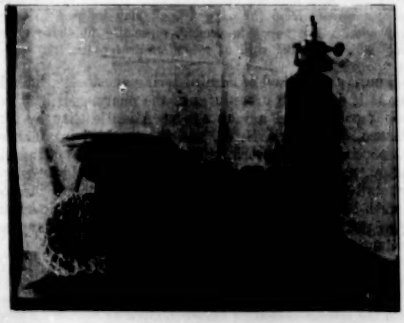

Fig. 2.—Nitrous oxid-ether vapor sequence apparatus. A, vaporizing bottles connected with bag *B* at *F*; *C*, foot-pump; *D*, Gwathney-Woolsey gas mask; *E*, gas tank connected with bag at *F*.

to 22 size, with opening at the end and side) is easily introduced with forceps shown. The tube is then fastened to the angle of the mouth by a suture passed through the cheek and tube, and the anesthesia carried on by even so simple an arrangement as the vapor bottles shown in Figure 1.

ANESTHETIC TECHNIC ADOPTED BY THE AUTHOR

Sedative medication in the form of morphin products, etc., as a preliminary to anesthesia in children comes under the general head of contra-indications in the extremes of life, so that seldom, if ever, is it used.

Initiation of the narcosis is accomplished in as speedy and certain a manner as is consistent with safety, by the selection of one of two methods, viz.: Nitrous oxid gas or the essence of orange (25 per cent.) on a mask, followed by chloroform in carefully administered, intelligently observed dosage. These are followed by ether, in some way vaporized at a distance from the little patient's airways.

The gas-ether sequence is to be preferred if handled in a proper manner, and to be condemned if not so

handled. The chloroform-ether sequence is safer than a poorly administered gas-ether. The technic which I use is the following:

The Gwathmey vaporizing bottles (A, Fig. 2) are properly filled with ether and water; 1 dram of essence of orange (25 per cent.) is placed in the water bottles. The foot-pump of the type shown (C, Fig. 2) is attached to bottles and from these to the lower end of the small breathing bag (B) and at this same point is attached a tube from a small tank of nitrous oxid. The bag is filled three-quarters full of gas; the mask (D) is placed quickly over the little patient's face, and in fifteen seconds unconsciousness ensues. After two breaths of gas have been taken, the foot-pump forces the weakest of ether vapors from the bottles into the bag where, like the gas, it is rebreathed, only a slight expiratory escape being allowed. This continues until deep ether narcosis ensues, at which time the breathing bag and mask are thrown aside and either a small vapor delivering Yankhaur mask is applied and connected with the bottles, or nasal tubes are inserted to the deep pharyngeal space. In either case, anesthesia by a non-refrigerating, minimum-dosed technic is continued. In ordinary anesthesia, that is, where access to the mouth or face is not needed, a towel or two, thoroughly covering the mask and confining the tidal air, gives the subject the benefit of considerable rebreathing with its carbon dioxid beneficence.

The ether indicator on the vaporizer rarely, if ever, goes above half way between ether and air. Instead of the foot-pump a stream from the oxygen tank may be used to carry over what ether vapor is needed, especially in those grave risks which test the skill of every surgical procedure.

The vapor method of administering anesthesia, including as it does such procedures as the pharyngeal insufflation recommended a year ago at Atlantic City by Dr. Pinneo, of Newark, N. J., and the tracheal insufflation for special surgical work, is one extremely easy of application, and because of its many virtues should be more generally adopted. An ordinary cautery bulb attached to a wash bottle of ether is superior to a drop technic on an open refrigerating mask and can be arranged by anyone without noticeable expense.

TECHNIC FOR ADENOID AND TONSIL WORK

As in any case initiation of the anesthetic is accomplished with the nitrous oxid-ether sequence, given as described above, and at the point where the breathing bag is thrown aside one or two soft rubber catheters are introduced through the nose and into the pharynx a distance equal to that from the external auditory meatus to the nares so that their ends rest just above the glottis, ether is thus insufflated to a point behind the obstruction of blood, instruments and fauces, and anesthesia is maintained by means of the foot-pump or the electric motor and pump (Fig., 1). The use of this latter means of air-supply furnishes coincidently one of the most valuable features of the technic, namely, a combined suction tube and tongue depressor. This suction tube, attached as it is to the air intake of the motor pump, and having an ordinary aspirating bottle between it and the pump, acts as a perfect aspirator of the throat contents during the operation, giving a clear field of vision to the operator and assisting materially the anesthesia by further freeing the airways of obstructing blood and mucus.

The vapor-delivery tube attached to a mouth-gag fails fully to maintain the narcosis because it delivers its anesthetic outside the obstructed area, and having the anesthetic vapor as strong as possible or in as large quantity as can be produced, avails nothing, inasmuch as the throat is obstructed at the fauces.

Nitrous oxid and oxygen as an anesthetic for adenoid and tonsil removal is not generally satisfactory, for the reason that it requires cumbersome apparatus to supply the large volume of gases needed in rendering them effectual through the nose; it produces a degree of cerebral congestion very productive of hemorrhage, and operator and anesthetist must be not only trained to work together, but in sympathy with each other's efforts and shortcomings.

RESPIRATORY RESUSCITATIVE MEASURES IN ANESTHETIC COLLAPSE

The very great majority of anesthetic deaths in both adults and children are of respiratory origin primarily, and in such accidents our efforts toward revival have been in no minior degree trivial. Artificial respiration as performed by the old recognized Sylvester or Shaefer methods has served well in some comparatively few cases, but its limitations are many. Oxygen, applied as it ordinarily is, by means of a tube placed in the nose, a funnel over the mouth, or similar procedure, almost provokes a smile when one realizes the state of the glottis, respiratory center and lungs when such collapse has occurred.

During a faulty narcosis with varying degrees of obstructed breathing, often progressively worse as the anesthesia proceeds, there is a constant negative pressure created within the chest by the violent muscular effort to obtain air through the obstructed throat, and when this continued asphyxia finally ends in respiratory collapse the epiglottis is so firmly sucked down against the vocal cords that its elevation by the finger is like pulling a cork out of a bottle; holding the jaw forward, even traction on the tongue under these circumstances is absolutely ineffectual in raising it, so that the ordinary artificial respiration with oxygen delivered outside the obstruction (in the mouth, for example) is next to useless. This condition of glottis and epiglottis was noted in utilizing the endotracheal tube for resuscitation of patients whom intern-anesthetists in hospitals had paralyzed, and in the presence of such physical conditions I believe that tracheal intubation offers the best means of quickly instituting artificial respiration in anesthetic collapse.

Another interesting phase of endotracheal artificial respiration has been developed in newly-born infants of atelectatic disposition where breathing has failed to materialize under the ordinary gymnastic manipulations. Any pediatrist who has used the O'Dwyer tubes can insert a small rubber, stiletted catheter into the glottis of a child without even the difficulty attending ordinary intubation, and though a mercury safety-valve between the oxygen tank and lungs is a primary requisite, emergency occasions could be met by a careful manipulation of the oxygen stream through the ordinary water bottle or a foot pump. Meltzer's recently described respiration valve effectually interrupts the stream of insufflated air or oxygen. This procedure in anesthetic collapse, sedative drug or gas poisoning, and post-partum atelectasis is a distinct advance in the means of resuscitating respiratory failure.

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Metabolism and Dietetics.—The whole subject of metabolism and its relation to dietetics reminds one somewhat of working out a picture puzzle, where not only one picture has been cut up into intricate shapes, but where numerous pictures have been cut up and confused. One worker fits in his little bit, and another his, and a third likewise, and so on, and then some one else discovers that two different pictures are being confused; and so the work goes on until every now and then the master mind comes along and groups the discovered bits aright.—**Friedenwald and Ruhräh, "Diet."**

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HYDROTHERAPY IN NERVOUS FATIGUE*

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Fatigue may be defined as an exhaustion of the bodily, nervous or mental powers, or of all combined. In the neural fatigue that we are to consider, it may be stated in broad terms that the person suffers in all the various spheres mentioned. Fatigue in the normal subject is not unpleasant, but a rather delightful preface to restful restoration.

The chemical conditions of fatigue lie in the production of the so-called "fatigue substances," particularly carbon dioxid and lactic acid. These substances in small quantities increase protoplasmic activity and augment muscular energy. The preponderance of evidence seems to favor the idea that there is a high degree of resistance to fatigue on the part of the brain and spinal cord, as well as the nerve fiber itself.

Fatigue is a general systemic sensation like hunger and thirst; it has its localized sensations, more especially in the eyes and muscles. Fatigue may become so overbearing as to become painful and destroy the desire of life. Brunton[1] says that so long as the muscles are connected with the central nervous system complete exhaustion of the muscle is impossible, for before it becomes paralyzed by its own exertion, the sensation is perceived by the nerve-centers and the nerve stimuli, which proceed to the muscle, are so much diminished that complete paralysis is never produced. The sensation of fatigue is perceived in the central nervous system but is produced by peripheral exertion. Fatigue is overcome only by the removal of those products that are the causative factors of the condition, and is therefore a matter of the relative balance between available energy and the resistance against which this energy must work.

We must clearly distinguish between genuine fatigue and that pseudo fatigue which results from a lack of the habit of industry. As Lee[2] has remarked, "most of us work too briefly and rest too long." Offner[3] well remarks that subjective symptoms offer an unreliable measure for fatigue, which he was able to substantiate by a study of physical and mental tests. The normally fatigued nervous system of one who has not made great drafts on that wonderful neural reservoir of which William James[4] speaks protects itself by seeking rest and recuperation, and it is now a fairly accepted belief that we often rest because we do not wish to be fatigued.

That the mental attitude has a great deal to do with the question of perception and feeling of fatigue is a well-known fact. The power of music to quicken the steps of the tired soldier, the influence of the emotions in redoubling one's strength, and the driving force of reward displace the feeling of fatigue in many instances. We instinctively feel that fatigue calls for rest; our minds become impressed with this fact and the continued consciousness of the fatigued state serves to intensify the consciousness to a greater or less degree, depending on the suggestibility of the individual.

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

1. Brunton, Lauder: On Being Tired; Practitioner, London, October, 1910.
2. Lee, Frederick S.: The Nature of Fatigue, Pop. Sc. Month., February, 1910.
3. Offner, Max: Die Gelstige Ermüdung; Berlin, Reulher and Reichard, 1910.
4. James, William: Energies of Man.

CAUSES OF FATIGUE

Many writers assign our complex civilization as the main cause of neural fatigue, but I would prefer to say that neural fatigue more often results from a lack of adaptability than as the direct effect of civilization on the central nervous system. It is improper mental work accompanied by irritation and worry rather than mental work *per se* that breaks one down. Muscular overexertion can undoubtedly bring about neural as well as mental fatigue, owing to the intimate physiologic connection between the central nervous system and muscular groups; in fact it is not a muscular proposition, but a neuromuscular one. Those who have had occasion to observe an athlete after strenuous exertion, a Marathon, or a six-day bicycle race, have noted in this strong healthy person physical and mental symptoms similar to those seen in the neuroses and psychoses. It may be interesting here to note that muscular fatigue is much more quickly recuperated from than that fatigue which results from prolonged mental strain and worry. When one's labor is pleasing and performed without internal mental friction, the work may be kept up for many months and years without nervous tire, whereas half the same amount of labor that is disagreeable will be prone to produce nervous breakdown and imperfect work. Labor unsuited to the individual is more apt to provoke fatigue than that for which he is specially fitted. If to these conditions of occupation be added insufficient hours of rest, worry, anxiety and the lack of home peace, we may expect nervous fatigue. While I believe that the sexual sphere may be productive of many cases of nervous fatigue, still I do not believe that it occupies the somewhat exaggerated position that certain writers seem to give it.

CLASSIFICATION

I would classify nervous fatigue as follows:

1. Fatigue resulting from inherent nervous weakness; hereditary factor.
2. Fatigue resulting from retained metabolic wastes; non-oxidative factor.
3. Fatigue resulting from toxins; non-eliminative factor; (*a*) endogenous; (*b*) exogenous..
4. Fatigue resulting from circulatory defects.
5. Fatigue resulting from organic diseases.

1. Fatigue resulting from inherent nervous weakness. Persons in this class are doomed by hereditary entailment of an unstable nervous system to a life of neural fatigue. They are persons who seem to "short-circuit" their nerve force and are thus "usually run down"; who live an existence on a narrow margin and are constantly making overdrafts on their limited capital.

2. Fatigue resulting from retained metabolic wastes. In this class we find a large number of persons whose metabolic processes, eliminative organs and tissues seem to be inadequate to the demands of caring for the removal of the normal or pathologic wear and tear of the body. A failure to oxidize these waste products is probably largely due to a disturbance of the so-called "internal secretions"; the secretions from the various ductless glands stimulate the removal of waste and favor cell reconstruction. An active circulation for the removal of waste products is a *sine qua non*, and the influence of hydrotherapy in developing a flexible circulation enables us to bring about brilliant results in these cases.

3. Fatigue from toxins, endogenous and exogenous. A great many, if not the majority of toxins, especially the putrefactive varieties, are produced chiefly in the intestinal canal, and a moderate sterility of this system

is undoubtedly of great advantage in nervous fatigue. The presence of indol, skatol, phenol, ammonia and other toxic products, to say nothing of the toxins arising from the various bacteria themselves, must be promptly removed. That weariness may be produced by the direct action of these chemical substances on the brain itself and on the motor nerves and muscles is now accepted by many authorities. It is in this way that neural fatigue is often brought about. Bernheim[5] believes that the toxin or toxins circulating in the blood have a special affinity for certain tracts in the nervous system and that this is frequently revealed by exaggeration of tendon reflexes, and further, that the toxic factor often underlies a case that is supposed to be due to some emotional shock, physiologic strain or passing infection. He says that suggestion may aid the functional elements, but is powerless against the underlying dyscrasia of the nervous system.

4. Fatigue resulting from circulatory defects. A failure of circulatory activity is frequently an added cause of fatigue, supplementing the effects of imperfect metabolic functioning and the formation and retention of toxins of all kinds. This may produce a state of hypertension or a great variation of blood-pressure, which is sometimes abnormally low, sometimes abnormally high.

5. Fatigue resulting from organic disease. Neural fatigue resulting from organic defects will, in a given case, depend on those pathologic changes that constitute the disease. Among the most common of all the underlying organic diseases that produce general nervous fatigue must be mentioned arteriosclerosis,[6] in which the sclerotic or fibrotic changes shut off the quantity of blood to the part, depriving it of the power to nutritionally care for itself. That many other organic diseases produce fatigue and exhaustion is well known, but the foregoing paradigm will serve for the purpose of calling attention to the necessity of carefully eliminating this factor in the diagnosis of fatigue conditions.

DIFFERENTIATION

It is not possible to separate nerve fatigue according to its causation, save in rare instances. It is well to bear in mind that nervous fatigue is an exceedingly complex condition and that the foregoing causes frequently combine, though one of these conditions may be so predominant as to make it the principal or real causative factor in the case.

SYMPTOMS

Pathologic nervous fatigue is induced by minimal exertion, or an exertion that would fail to produce exhaustion in a normal person. Fatigue, lassitude and exhaustion when established are present even without exertion, and the fatigue is increased by physical as well as mental activity. Fatigue is nearly always associated with a more or less marked emotional condition. Fatigue, irritability, emotionalism and generalized mental depression form the characteristic basis of nearly all cases of nervous fatigue. The diagnosis of neural fatigue is often made when the symptoms are really due to an underlying organic disease, like tuberculosis or syphilis. Even neurasthenia is not a correct term to cover all cases. Nervous fatigue is very common; genuine neurasthenia, as compared to the number of cases so labeled, might be designated as rare. A much closer restriction of this designation would be beneficial to both physician and patient.

5. Bernheim, L.: Rev. de méd., Paris, 1909, xxix, No. 4.
6. Pope, Curran: The General Physiologic and Therapeutic Action of Hydrotherapy, Jour. Advanc. Therap., May, 1908.

METHODS

The methods to be employed in the treatment of nervous fatigue naturally fall under two categories:

1. General systemic measures, the aim and object of which is to remove the underlying causative conditions and to tone, strengthen and reconstruct the nervous system.

2. Local measures for the palliation or relief of localized symptoms.

Each of these can be further subdivided into (1) general systemic measures (*a*) in the home and (*b*) sanatorial; (2) local measures (*a*) in the home and (*b*) sanatorial.

It is my belief, perhaps based on personal experience and not perhaps without bias, that private hospitals or sanatoriums offer the best places for the treatment of these patients.

Hydrotherapy is by far the most important of all the physical measures used in the treatment of nervous fatigue. Long experience has led me to the belief that, were I limited to one method alone for the management of this disorder, I would unquestionably choose hydrotherapy. The hydriatic prescription can be intelligently applied to the patient only when it is based on a thorough diagnostic knowledge of the practical case in hand. With this as a basis and a thorough knowledge of the physiologic action of hydrotherapy and its associative procedures, we are then in a position to "temper the wind to the shorn lamb." It is my opinion that the nervously fatigued do best in some small institution, thoroughly equipped, owing to the needs of complex apparatus, by means of which the various forms of douche can be administered, and to the further fact that the physician in this line of work acquires a knowledge and experience that enables him to readily meet the problems that arise in every case of this disorder.

Hydrotherapy strikes at the root of the trouble; endeavors to remove the underlying cause by physiologic action, lessens nerve sensitiveness, invigorates and strengthens nerve processes, and raises the general mental feeling of buoyancy. In cases of nervous fatigue, the treatment must be persisted in for some time, from three to six months or even longer. It has for its object not alone the relief of the fatigue, but also a reconstruction that will resist morbid influences after the patient returns to his former life. It must be borne in mind that the douche to the spine, under various pressures, is a powerful agent in arousing weakened spinal centers to activity; it develops wide-spread spinal reflexes, improves the nutrition of the cord and centers, by strong fluxive or hyperemic results, to the starved and irritable centers. Few cases are so simple that they do not require a combination of methods.

The principles that underlie the treatment of nervous fatigue by hydrotherapy and its procedure, together with the methods that can be employed, follows:

1. A preliminary sweating procedure. This draws the blood to the surface, stimulates glandular activity and prepares the patient for the cold application. Methods: Full dry-pack, full wet-pack, vapor or steam; heat, superheated dry hot air, full bath and incandescent electric-light bath. The last-named is undoubtedly the best.

2. A warm application. The warm water cleanses the skin by its mechanical effect, increases the dilatation of the blood-vessels and prepares the patient for reaction. Methods: warm full bath, rain bath, needle bath,

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douche (fan, spray, jet and Scotch), especially applied to the general body surface, spine and liver.

3. A cold application. This is tonic, reconstructive, eliminant and rejuvenating. In the nervously fatigued this should always follow sweating procedures and warm applications. Object: to train patients to stand strong pressures and cold temperatures, which should always be brief. Methods: sponge, affusion, dripping sheet, half bath and affusion, shower, rain-bath, needle and douche (fan spray, jet and Scotch).

4. Reaction. This is the absolute essential and fundamental necessity of all hydriatic methods in the treatment of nervous fatigue. Reactions is that sense of glow, stimulation and feeling of pleasure and comfort, combined with a pinking of the skin, a general tonic state of the circulation on the surface, etc., that follows a moderate application of cold.

5. Brevity. All forms of treatment in nervous fatigue should be brief. They should commence with the shortest possible duration, of the mildest temperatures and lowest pressure, all of which are gradually increased. When the maximum application is reached of temperature and pressure it should still be encompassed under the term "brevity."

6. Frequency. The applications may be made from three to six times weekly, best in the forenoon, from two to three hours after eating and usually followed by rest.

7. Patients do best on a combination of methods; for example, an electric-light bath, followed by warm or hot rain-needle, fan or jet, rapidly reduced to a lower temperature, and this in its turn followed by a cold anal douche for constipation. In my experience, which covers the range of drug, mechanical and so-called physiologic methods, I have never yet found anything to equal the rain, needle and jet douche.

PLANS OF TREATMENT

Plans of treatment may be divided into those that may be employed (*a*) at home and (*b*) at sanatoriums. I have already[7] outlined these as follows:

(*a*) **A plan suitable for the home or for those whose reaction is poor would be the following: Dry-pack for from one-half to one hour, followed by a cold sponge with water at a temperature of 70 F. for three minutes, with vigorous friction. As soon as this point is reached dispense with the dry-pack and give the dripping-sheet at 65 F. for three minutes, with good friction, while the patient stands in a foot-tub of water as hot as can be borne. Reaction must be secured. This treatment is generally administered in the morning, and when this time is selected give the general wet-pack at 65 F. for one hour at bedtime. When the patient is removed from the pack he is rapidly dried and no reaction is sought. The advantage of this method of treatment is to obtain the stimulating and tonic influences of the dripping-sheet in the morning and the sedative and sleep-producing effects of the wet-pack at bedtime.**

Another good method is to have the patient sit in a half bath with water at from 102 to 104 F., while the attendant gives him an affusion at 80 F. At this point the patient should stand in the tub in water as hot as can be borne, while the affusion is given to the entire body, or the water is thrown with force against the body from a large dipper. This may be further modified by first immersing the body in warm water, then giving a salt rub or glow, followed by the affusion. The warm full bath (104 to 105 F.) for five or seven minutes, followed by the salt rub and finally by the cold shower at from 70 to 65 F.. will be found useful. Reaction is essential.

7. Pope, Curran: Practical Hydrotherapy, Cincinnati Medical Book Company, 1909.

(*b*) **"In *institutions or sanatoriums* many women and nearly all men may *commence* with the following, particularly if the patient is up and going about: Electric-light bath or hot-air bath until perspiration commences, followed by the circular or horizontal rain-bath at from 100 to 104 F. for one and one-half to two minutes, reduced to 75 F. for one-fourth minute, with a pressure of 20 pounds. Reduce the temperature 2 degrees daily to 60 F. and increase the pressure 2 pounds daily until 30 is registered. After about a week of this treatment we may add to the foregoing the fan douche at a temperature of 60 F. to the entire body for from five to ten seconds. The next move should be the following: Electric-light or hot-air bath until perspiration take place, followed by the horizontal or circular rain-bath at 100 to 104 F. for one minute, reduced to 60 F. for from fifteen to twenty seconds, pressure 30 pounds, to be followed by the jet douche to the spine and legs at 60 F. for five seconds. An excellent method of treating these cases after reaction has been well established is to apply the jet douche to the spine at a temperature of 105 F. for a half to one minute, followed by the jet to the spine at a temperature of 60 F. for ten seconds, increasing the temperature of the hot water 2 degrees daily until 110 or even 120 F. is reached, at which point it will usually be found that the patient can tolerate no higher temperature. This is especially useful in men who are physically strong and who complain of persistent "head feelings" and tender spine. Neurasthenics do not, as a rule, stand the Scotch douche well. Certain prominent symptoms often demand special attention.**

MEETING SPECIAL SYMPTOMS

Hydrotherapy offers a fertile field for the meeting of the various symptoms, objective and subjective, that occur in nervous fatigue.

Insomnia. The insomnia can best be met by the cold-pack or dripping-sheet at bedtime, or the so-called "Neptune's girdle" or trunk compress, consisting of a coarse linen bandage wrung out of water at a temperature of 65 F. and covered by several layers of the same material to exclude the air. It should be worn all night. A most excellent method is the neutral bath, temperature from 94 to 96 F. for from twenty to sixty minutes. Simple measures that sometimes produce sleep are the use of Chapman's ice-bag to the spine, or a hot and cold spinal sponge. In addition, we may give from 6 to 12 ounces of warm milk on retiring, either plain or predigested. A short foot-bath should be given.

Headaches and head pressure. For headaches and head pressure the fomentation applied for five or ten minutes twice, and followed by a cold compress, is very effective. If the headache is congestive, the hot foot-bath should be used, followed by the ice-bag to the nape of the neck and the cold compress to the forehead. Sitz-baths at 90 F., reduced to 65 F., or cold foot-baths, will often give relief. If the headache is persistent, indefinable and annoying, it can sometimes be permanently relieved by means of the Scotch or alternate douche to the spine and legs.

"Spinal irritation," so-called, or the "neurasthenic spine," is best met by general douche treatment to the spine. When this is not effective, the Scotch douche at from 120 to 125 F. for thirty seconds should be used, followed by a temperature of from 50 to 60 F. for from five to ten seconds, with four alternations. Sometimes the hot and cold spinal sponge at bedtime is successful.

For *eye pains* and *muscae volitantes* the fomentation to the eyes and forehead should be employed, followed by the cold compress for half an hour, repeated, if necessary, several times daily.

For *ovarian irritation* and *vaginal discharges*, hot vaginal irrigation should be used daily or twice daily,

and hot trunk pack applied sufficiently low down to include the pelvis and hips; that is to say, to the middle of the thighs.

Sexual irritations can often be promptly relieved by the hot sitz-bath from 110 to 115 F. for from five to ten minutes, followed by the cold jet douche to hips and lower spine for fifteen seconds.

Menstrual delay and pain are best met by the hot sitz-bath from 110 to 115 F. for from ten to fifteen minutes, followed by cold affusion over the hips. The warm (not hot) vaginal douche favors the commencement of the period.

For *anorexia*, a glass of ice-water should be given one hour and the ice-bag applied for half an hour before meals. It is astonishing sometimes what results will follow this simple treatment.

For *dyspepsia nervosa* the patient must be placed on general treatment, although the trunk pack at a temperature of 65 F. for one hour is sometimes helpful.

Rectal irritation and *constipation* are greatly benefited by the use of the perineal and anal douche as hot as can be borne, followed by a cold douche of from 60 to 50 F.; stronger revulsive effects may be obtained by an alternate hot and cold application.

Colitis and *intestinal catarrh* are best met by means of the dripping sheet, followed by the sitz-bath from 70 to 65 F. for from three to ten minutes, during which time the attendant and patient rub the abdomen and hips thoroughly.

Gastro-enterocoloptosis is best met by an abdominal supporter and the Scotch or alternating douche to the abdomen, under weak pressure, gradually increased. The temperatures may be increased and decreased gradually.

Backache is often promptly relieved by the jet and Scotch douche or, what is better than all others, the Scotch jet douche.

Vertigo is best met by general treatment and the hot and cold jet to the spine.

PREVENTION

Prophylaxis and the maintenance of health after recovery are best secured by a combination of factors, of which hydrotherapy is the most important. A person who has been nervously fatigued should try and adapt himself to reality and to the work he has to do. All hygienic measures and the consistent and persistent use of cold water will maintain a degree of health that is little short of surprising. As I have heretofore remarked, it would be far better for these persons to purchase a good shower bath than many of the ornate pieces of bric-a-brac that frequently adorn parlors and form many disharmonies.

The aim of the treatment has been to remove etiologic factors, to stimulate the metabolic processes of the body and change the pathologic state to a normal one. Sometimes health has been obtained even when I could not see that there was a cure from a histologic point of view, but from the physiologic standpoint the recovery has presented that appearance.

RELATIONS TO DRUG MEDICATION

It has been my observation that hydrotherapy reinforces and makes much more efficient any drug medication that we may care to administer in conjunction with the hydriatic method. Iron, arsenic and other tonics become more effective; smaller doses of bromid and an absence of acne is noticeable, especially in epilepsy; hydrargyrum bcomes much more effective and rapid in its action in syphilis; smaller doses of hypnotics are required for insomnia; drug habitués and alcoholics require smaller doses and finally tonic (that is, cold) hydrotherapy requires a much lessened quantity, as well as number of drugs, in the medication of gastric disorders.

REMARKS

Condemnation of unscientific hydrotherapy cannot be too strongly urged. "How many crimes, O Hydrotherapy, have been committed in thy name!" To this there is no answer. From a considerable acquaintance with users of hydrotherapy, I am inclined to believe that the greatest danger lies in the lack of a real diagnosis, the separation of the sheep from the goats. With a knowledge of its action not alone in nervous fatigue, but also in a whole host of disorders and diseases, a failure to use it is, in a sense, a medical crime. It is too valuable and important a remedy, too far-reaching and useful, to be relegated to the charlatan, quack and that abomination of all hydriatists, the "giver of baths." Hydrotherapy belongs to the medical profession; it is a scientific measure, capable of scientific application, and must never again be allowed to drift to destruction on the rocks of therapeutic nihilism.

CONCLUSIONS

1. Nervous fatigue is a complex state of mind and body, largely toxic.

2. Its origin is due to an inability on the part of the individual to adapt himself to heredity, environment and reality.

3. Its symptoms are many and occur as an entity or in conjunction with many other disorders and diseases.

4. Hydrotherapy is an ancient measure, universally found, possessing cleansing, antiseptic, thermic and mechanical powers.

5. Its physiologic action on the human body is largely brought about through disturbing influences of temperature, and mechanical effects on peripheral sensory nerves.

6. Brief applications followed by reaction do not particularly affect temperature.

7. The circulation is increased on the surface by heat, and is accompanied by dilated blood-vessels, quickened heart action and lowering of arterial tension. Cold contracts the surface of blood-vessels, slows the heart's action, decreases the pulse-rate and raises arterial tension; it is followed by reaction with moderately dilated blood-vessels.

8. Respirations are increased in number, lessened in depth, and oxygen and carbon dioxid diminished by heat. Cold, on the contrary, increases the amplitude and depth as well as the absorption of oxygen and the elimination of carbon dioxid.

9. On the nervous system, the direct action of water through its thermic and mechanical effects is conveyed to the center and there reflected in a thousandfold way, producing results both tonic and sedative that make it a true reconstructor.

10. Metabolism in all its phases is affected by hydrotherapy, less in degree in the case of heat than with cold. As a tissue up-builder, tonic, stimulant, eliminant and depletive, it is unequaled.

11. Muscular tissue is relaxed and enervated by heat; stimulated, revivified and toned 33⅓ per cent. by cold.

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12. The blood is changed, leukocytosis induced, opsonic index raised, purification promoted, hemoglobin increased, corpuscles enriched and the alkalinity made greater by these applications.

13. Many methods may be employed, but tonic (cold) hydrotherapy, followed by reaction, is the aim and object to be achieved. These may be both general and local.

14. Tonic (cold) hydrotherapy when properly used restores and maintains neural health as well as general betterment of the bodily functions.

15. It increases drug absorption and distribution, and enhances their physiologic action and therapeutic possibilities.

16. It belongs to scientific medicine and should take its place alongside of the other valuable medical and surgical methods that form the physician's armamentarium.

115 West Chestnut Street.

ABSTRACT OF DISCUSSION

DR. G. BETTON MASSEY, Philadelphia: I do not like the term "fatigue neurosis" for these conditions. The word "fatigue" in this connection is unfortunate because it has caused the society belle to think that all she has to do is to go to bed in order to get rid of it. Now what are doctors to do? The rest-cure that was made famous some years ago by one of the most eminent members of the profession has the serious disadvantage of overlooking the fact that what is wanted is this physiologic cleaning out and stimulating. The rest-cure on analysis in the hands of its best users will be found like the sanatorium treatments, a profound, rigid, moral box in which the patient is placed to be emotionally and physically played on by the physician, the rest being one of the most incidental parts of the whole thing.

DR. CURRAN POPE, Louisville, Ky.: I differ with Dr. Massey, in that I think the term "fatigue" is much better than the term "neurasthenia." We are all of us prone, though, to quarrel with terms. If we can only understand what the terms mean, and if we will only interpret the condition and not the term and treat the patient and the condition and not the name and the term, we shall frequently do better work.

THE QUALITY OF DRUGS SOLD TO DISPENSING PHYSICIANS*

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Last year in reporting the work of the Chemical Laboratory of the American Medical Association bearing on the quality of unofficial and little-used drugs I took the ground that drugs which were widely used and which were sold under competition were likely to be of good quality and that, on the other hand, little-used drugs were unreliable and likely to be of poor grade. While this contention, if correct, would indicate that standard drugs would be of good quality, no matter where purchased, it has been said repeatedly and insistently in pharmaceutical circles[1] that the drugs sold by "physicians' supply houses" are uniformly of poor quality. In general those who made these charges gave no specific proof of their assertions, and since pharmacists suffer financially through the dispensing of medicines by physicians these charges did not appear particularly convincing. That the charge that physicians dispense poor drugs was dictated largely by the pharmaceutical opposition to such dispensing by physicians is perhaps best shown by the attitude taken by certain drug journals, which by inference, if not directly, take the stand that all physicians who dispense their own medicines are quacks, as may be illustrated by the following:

In the Chicago Retail Druggists Association's *C. R. D. A. News*, Dec. 28, 1912, was published an article entitled "The Quack Dispensing Physician in Chicago," regarding whom it was said: ". . . they put up the cheapest pill or tablet they can buy from some obscure pill factory and which in most cases would do good service if loaded into shotgun shells for the sportsman in quest of game."

A cartoon from the *Retail Druggist* was published in *N. A. R. D. Notes*, the official journal of the National Association of Retail Druggists, Oct. 24, 1912, p. 135, entitled "Time to Rescue the Woman from the Gorilla," in which is depicted a large gorilla, "the dispensing doctor-quack," running off with a woman, "innocent patient."

As a large number of physicians for some reason or other dispense their own medicines, it seemed desirable that an investigation of the drugs sent out by these houses be made in the Chemical Laboratory of the American Medical Association and the findings published, so that physicians might learn something of the general reliability and competence of this class of pharmaceutical concerns. This seemed the more important since, it having been shown that the quality of drugs depends on competition, a report on the nature of these drugs would bring about more real competition—that is, the giving of preference, if differences exist, to those firms which supply high-quality drugs at moderate cost.

As stated before, those who have made the general charges of unreliability against the "physicians' supply houses" did not offer specific information as to the drugs which had been found inferior or to the firms which had been proved unreliable. A list of "physicians' supply houses" deemed worthy of investigation was offered, however, and it is the products of these firms which it was undertaken to investigate. As the charges against the houses which make a specialty of supplying physicians included both dishonesty and incompetence, specimens were purchased which should show whether or not these firms sell adulterated drugs and also show their competence in so far as they sell products of their own manufacture. As it has been shown repeatedly[2] that in the case of little-used drugs or unscientific complex mixtures few, if any, pharmaceutical manufacturers have cared much regarding the quality of such preparations, in this examination only staple drugs were selected. The drugs were purchased by an Illinois physician from the following "physicians' supply houses":

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Sixty-Fourth Annual Session, held at Minneapolis, June, 1913.

1. Report of the Committee on Drug Reform, American Pharmaceutical Association, sixtieth annual meeting, Denver, Aug. 19, 1912. Am. Druggist, September, 1912, p. 50. Report of the Committee on the Drug Market, American Pharmaceutical Association, sixtieth annual meeting, Denver, Aug. 19, 1912, Am. Druggist, September, 1912, p. 55.

2. Unofficial Preparations of Hydrastis (Golden Seal), Rep. Chem. Lab. A. M. A., 1908, p. 28. THE JOURNAL A. M. A., July 4, 1908, p. 52. Examination of Tablets of Bismuth, Opium and Phenol, Rep. Chem. Lab., A. M. A., 1908, p. 28. THE JOURNAL A. M. A., July 25, 1908, p. 330. Zinc Permanganate, Rep. Chem. Lab., A. M. A., 1909, p. 15. THE JOURNAL A. M. A., Feb. 6, 1909, p. 488. The Composition of Commercial Copper Citrate, Rep. Chem. Lab., A. M. A., 1910, p. 27. The Composition of Strychnin Arsenate, Rep. Chem. Lab., A. M. A., 1910, p. 35. THE JOURNAL A. M. A., Sept. 24, 1910, p. 1128. Aromatic Digestive Tablets, Rep. Chem. Lab., A. M. A., 1910, p. 64. THE JOURNAL A. M. A., Aug. 20 1910, p. 710.

Frank S. Betz Company.
The Columbus Pharmacal Company.
Flint, Eaton & Co.
McCoy, Howe Company.
The National Drug Company.
The Norwich Pharmacal Company.
Pitman-Myers Company.
The Ray Chemical Company.
A. E. Remick Pharmacal Company.
The O. F. Schmid Chemical Company.
Sutliff & Case Company.
The Toledo Pharmacal Company.
Truax, Greene & Co.
The William A. Webster Company.
The Zemmer Company.

Attempts were also made to purchase the products from the following:

Goshen Pharmacal Company.
Lafayette Pharmacal Company.

The Goshen Pharmacal Company did not respond to a request for a price list, while the Lafayette Pharmacal Company refused to sell ordinary official drugs unless a supply of its "specialties" also was purchased. To serve as a means of comparison, the several drugs selected for examination were also obtained through a Chicago wholesale house from a number of pharmaceutical houses whose products are commonly found in drug-stores. These firms are:

Eli Lilly & Co.
H. K. Mulford Company.
Parke, Davis & Co.
Schieffelin & Co.
Sharp & Dohme.

With a view of detecting possible adulteration or sophistication, drug preparations containing relatively high-priced ingredients were purchased, namely, morphin tablets, potassium iodid tablets and fluidextract of hydrastis (golden seal).

MORPHIN TABLETS

One-fourth grain hypodermic morphin sulphate tablets were purchased from fourteen "physicians' supply houses" and five from the "regular" pharmaceutical houses and their morphin content and variation in weight determined.[3] A comparison of the morphin claimed by the label to be present with the amount indicated by the examination shows a range of variation for the tablets purchased from the "physicians' supply houses" of from 84.2 to 115.7 per cent. of the claimed amount. The morphin content of the tablets purchased from the "regular" pharmaceutical houses showed a range of from 95.2 to 102.4 per cent. of the amount claimed.

The determination of the individual weights of the tablets showed that the greatest individual variation in any product from the "physicians' supply houses" ranged from 88.2 to 117.8 per cent. of the average weight, while the product of the firm showing the least variability in weight ranged from 96.2 to 105.4 per cent. of the average weight. Among the products from the "regular" pharmaceutical houses the greatest individual variation in weight ranged from 85.8 to 115.5 per cent. of the average weight, while the product of least variation ranged from 95 to 104.5 per cent. of the average weight.

It is seen that the products of the "physicians' supply houses" showed a wider range in morphin content than the products of regular pharmaceutical houses; yet the variation in the products of either class of firms is too small to make it likely that any consideration of the price of ingredients entered into the making of these tablets. Further, a comparison of the price of these tablets with the morphin content showed no relation between these two factors. The results found are given in Table 1.

TABLE 1.—ANALYSES OF MORPHIN SULPHATE TABLETS

Firm	Heaviest Tablet in 10	Lightest Tablet in 10	Average Weight of 10 Tablets	Difference Between Max. and Min. Wt. Gm.	Maximum Percentage of Average Wt. Per Cent.	Minimum Percentage of Average Weight Per Cent.	Alkaloid: Percentage of Claim; Precipitation Method Per Cent.	Morphin Sulphate: Percentage of Claim; Crystallization Method Per Cent.
1. Frank S. Betz Co.	0.0342	0.0307	0.03250	0.0035	105.23	94.46	95.85	95.61
2. The Columbus Pharmacal Co.	0.0310	0.0251	0.02744	0.0059	112.97	91.47	100.52	102.39
3. Flint, Eaton & Co.	0.0349	0.0295	0.03236	0.0054	107.84	90.32	96.05	95.45
4. Eli Lilly & Co.	0.0267	0.0221	0.02398	0.0046	111.35	92.16	102.39	104.99
5. McCoy, Howe Co.	0.0339	0.0273	0.03206	0.0066	105.74	85.01	115.73	115.94
6. H. K. Mulford Co.	0.0271	0.0220	0.02442	0.0051	110.97	90.10	101.06	101.50
7. The National Drug Co.	0.0355	0.0297	0.03243	0.0058	109.46	91.58	100.58	100.54
8. The Norwich Pharmacal Co	0.0202	0.0160	0.01841	0.0042	109.72	87.00	91.55	91.76
9. Parke, Davis & Co.	0.0288	0.0262	0.02757	0.0026	104.46	95.03	97.01	96.34
10. Pitman-Myers Co.	0.0320	0.0269	0.02933	0.0051	109.10	91.71	89.52	90.22
11. The Ray Chemical Co.	0.0489	0.0433	0.04582	0.0056	106.72	94.56	94.57	92.56
12. Schieffelin & Co.	0.0259	0.0219	0.02450	0.0040	105.71	89.39	95.21	95.25
13. The O. F. Schmid Chemical Co.	0.0319	0.0285	0.03041	0.0034	104.90	93.71	104.15	106.56
14. Sharp & Dohme	0.0321	0.0247	0.02878	0.0074	115.53	85.82	95.44	96.81
15. Sutliff & Case Co.	0.0333	0.0304	0.03159	0.0029	105.44	96.23	103.80	104.19
16. The Toledo Pharmacol Co.	0.0297	0.0239	0.02604	0.0058	114.05	91.78	84.21	84.10
17. Truax, Greene & Co.	0.0313	0.0275	0.02961	0.0038	105.71	92.87	88.39	88.07
18. The William A. Webster Co	0.0271	0.0214	0.02426	0.0057	111.76	88.21	97.53	97.29
19. The Zemmer Co.	0.0329	0.0290	0.03067	0.0039	107.27	94.23	88.63	88.03

POTASSIUM IODID TABLETS

Potassium iodid tablets from fifteen "physicians' supply houses" along with specimens from five "regular"

3. To twenty-four tablets (representing 6 grains of morphin sulphate) contained in a beaker, 20 c.c. of water are added from a pipet. After solution is complete, 0.25 c.c. of ammonia water is added from a buret, the beaker agitated continuously for five minutes and the container allowed to stand over night. The crystals are then transferred to a tared Gooch crucible, using the mother liquor to complete the transfer, washed with 10 c.c. of a saturated, aqueous solution of morphin and dried at 60 C. (140 F.) to constant weight. To the weight found, a correction of 0.0076 gm. is added for the morphin remaining in solution.

To fifty tablets (representing 12.5 grains of morphin sulphate) 90 c.c. of water and 10 c.c. of diluted hydrochloric acid are added, the solution heated to boiling and 5 c.c. of barium chlorid solution slowly added. The mixture is allowed to stand over night and the precipitated barium sulphate collected, heated and weighed in the usual way.

$$BaSO_4 \times 3.24845 = (C_{17}H_{19}O_3N)_2.H_2SO_4.5H_2O.$$

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pharmaceutical houses were examined. A comparison of the potassium iodid claimed to be present in the product of the "physicians' supply houses" with that indicated by an estimation of the iodin content of these tablets showed a range of from 88.6 to 106.6 per cent. of the claimed amount. The products of the five "regular" pharmaceutical houses showed a range of from 99.1 to 101.4 per cent. of the claimed content.

This examination shows that the products of the "pharmaceutical houses" show a markedly smaller variation than those of the "physicians' supply houses." That price had nothing to do with the variation is shown by the fact that the lowest-priced brand is among those which have the highest content of potassium iodid. Table 2 gives the results obtained.

TABLE 2.—ANALYSES OF POTASSIUM IODID TABLETS

Firm	Average Weight of 10 Tablets Gm.	Potassium Iodid* Percentage of Claim Per Cent.
1. F. S. Betz Co.	0.3334	101.6
2. Columbus Pharmacal Co.	0.3303	101.6
3. Flint, Eaton & Co.	0.3305	101.4
4. Eli Lilly & Co.	0.3252	100.2
5. McCoy Howe & Co.	0.3625	102.6
6. H. K. Mulford Co.	0.3266	100.4
7. The National Drug Co.	0.3281	99.8
8. Norwich Pharmacal Co.	0.3224	98.6
9. Parke, Davis & Co.	0.3277	99.6
10. Pitman-Myers Co.	0.3298	100.8
11. Ray Chemical Co. (2 gr. tablets)	0.1244	94.5
12. A. E. Remick Pharmacal Co.	0.3401	104.4
13. Schieffelin & Co.	0.3243	99.1
14. O. F. Schmid Co.	0.3258	93.8
15. Sharp & Dohme	0.3316	101.4
16. Sutliff & Case Co.	0.3640	104.4
17. Toledo Pharmacal Co.	0.3477	106.6
18. Truax, Greene & Co.	0.2901	88.6
19. The Wm. A. Webster Co.	0.3233	99
20. The Zemmer Co.	0.3164	96.6

* The potassium iodid content was determined by pulverizing ten tablets, thoroughly mixing the powder and from 0.2 to 0.3 gm. portions of the powder taken and titrated according to the method of Andrews (Jour. Am. Chem. Soc., XXV, 756). The average weight of ten tablets was determined and from this and the potassium iodid content of the material constituting the tablets the potassium iodid content of the average tablet was calculated; the content thus found, compared with the claimed amount of potassium iodid, indicated the percentage of claim found.

FLUIDEXTRACT OF HYDRASTIS (GOLDEN SEAL)

Fourteen specimens from the "physicians' supply houses" were obtained and five from "regular" pharmaceutical houses. The specimens were assayed according to the method of the U. S. Pharmacopeia. The products of the "physicians' supply houses" were found to range from 84 to 135 per cent. of the amount required by the U. S. Pharmacopeia, and the products of the "regular" pharmaceutical houses ranged from 82 to 119.5 per cent. of the U. S. Pharmacopeia standard. While as before the products of the "physicians' supply houses" show a wider variation than the products of the "regular" pharmaceutical houses, the difference in this case is not great. The lowest values of the two classes of firms are practically the same.

Since the assay method for fluidextract of hydrastis has been official for nearly eight years and is most simple, it is rather surprising that a large pharmaceutical firm, supposed to have well-equipped scientific laboratories, should still be unable to approximate more nearly the U. S. Pharmacopeia standard. Table 3 gives the results obtained.

To test the accuracy of the manufacturing methods and the technical training of those responsible for the products sold by the "physicians' supply houses" three pharmaceutical preparations were selected, namely, solution of potassium arsenite, or Fowler's solution, ointment of zinc oxid, or zinc ointment, and fluidextract of digitalis.

SOLUTION OF POTASSIUM ARSENITE (FOWLER'S SOLUTION)

Specimens of solution of potassium arsenite from fourteen "physicians' supply houses" and five "pharmaceutical houses" were examined. A comparison of the arsenic content claimed to be present in the products of the "physicians' supply houses" with that given by the U. S. Pharmacopeia method for the determination of arsenic shows a variation of from 80.4 to 103.9 per cent. The products of the "pharmaceutical houses" showed a variation of from 96.7 to 102.2 per cent.

TABLE 3.—ANALYSES OF FLUID EXTRACTS OF HYDRASTIS (GOLDEN SEAL)

Firm	Alcohol Declared, Per Cent.	Hydrastin Found (Gm. in 100 c.c.)	Percentage of U. S. P. Standard.
1. Frank S. Betz Co.	50	2.10	105
2. The Columbus Pharmacal Co.	52	2.08	104
3. Flint, Eaton & Co.	60	2.15	107.5
4. Eli Lilly & Co.	46	1.64*	82
5. McCoy, Howe & Co.	66	2.01	100.5
6. H. K. Mulford Co.	50†	2.03	101.5
7. The National Drug Co.	54	2.70	135
8. The Norwich Pharmacal Co.	47	2.06	103
9. Parke, Davis & Co.	47	2.07	103.5
10. Pitman-Myers & Co.	43†	1.92	96
12. A. E. Remick Pharmacal Co.	40†	1.81	90.5
13. Schieffelin & Co.	50	2.12	106
14. The O. F. Schmid Chemical Co.	50	1.68	84
15. Sharp & Dohme	47	2.39	119.5
16. Sutliff & Case Co.	‡	2.04	102
17. The Toledo Pharmacal Co.	46†	2.70	135
18. Truax, Greene & Co.	57	2.19	109.5
19. The William A Webster Co.	47	2.52	126
20. The Zemmer Co.	‡	1.71	85.5

* This specimen was assayed in triplicate. The results were 1.61, 1.69 and 1.63 gm. hydrastin per hundred c.c. In the last assay after the two prescribed shakings with ether had been made a third and a fourth shaking were carried out and the residues weighed separately. The total increase was but 0.03 gm. of hydrastin per hundred c.c., showing that the extraction as directed by the U. S. P. was practically complete.
† Maximum; ‡ Not declared.

Again the products of the "pharmaceutical houses" vary somewhat less than those of the "physicians' supply houses" and, as was found before, the price does not indicate quality, as the lowest in arsenic content was next to the highest in price. While in ordering these preparations the official title "Solution of Potassium Arsenite" was used, the product sent by Parke, Davis & Co. was labeled "Concentrated Fowler's Solution (without Lavender) for Preparing Fowler's Solution," and was stated to be eight times the strength of the official solution. The preparation sent by Pitman-Myers Company was labeled "Veterinary Solution, Potassium Arsenite P-M Co." Table 4 gives the results obtained.

OXIDE OF ZINC OINTMENT

Oxid of zinc ointment or, as it is commonly known, zinc ointment, like most other ointments, requires some skill to make it. Like most other ointments it is prone to deteriorate and when marketed is likely either to show signs of deterioration—rancidity of the ointment base or separation of the solid material from the fat—or else to have been rendered more permanent by departing from the official formula. The specimens purchased were therefore examined, first to determine whether or not they had been made according to the U. S. P. formula for zinc oxid ointment, and if not, whether or

not a proper declaration of the fact was made on the labels. Second, the physical character was noted to determine whether or not the ointments were satisfactory preparations, that is, well-made ointments.

Of the fifteen preparations obtained from the "physicians' supply houses" five were made with the U. S. P. base, while the remaining, by such terms as "special," "improved," etc., were acknowledged to have been made with an unofficial base, generally petrolatum. In the case of the products obtained from the "regular" houses, four were declared to be made with the U. S. P. base. In the case of one specimen, that of Sharp & Dohme, departure from the U. S. P. formula was acknowledged, or at least hinted at by the statement that it was "Strength of Unguentum Zinci Oxidi, U. S. P." This specimen was found to contain, besides the required amount of zinc oxid, about 20 per cent. of corn-starch. As to the physical appearance of the ointment as obtained from the two classes of houses, those from the "regular"

TABLE 4.—ANALYSES OF SPECIMENS OF FOWLER'S SOLUTION

Firm	Percentage Arsenic Trioxid Claimed, Per Cent.	Percentage Arsenic Trioxid Found, Per Cent.	Arsenic Trioxid Percentage of Claim, Per Cent.
1. Frank S. Betz Co.	1	0.905	90.50
2. The Columbus Pharmacal Co.	1	1.039	103.9
3. Flint, Eaton & Co.	1	0.990	99.0
4. Eli Lilly & Co.	1	1.022	102.2
5. McCoy, Howe Co.	1	1.002	100.2
6. H. K. Mulford Co.	1	0.971	97.1
8. The Norwich Pharmacal Co.	1	0.968	96.8
9. Parke, Davis & Co. (labeled "Concentrated Fowler's Solution")	8	7.733	96.7
10. Pitman-Myers Co.	1	0.833	83.3
11. The Ray Chemical Co.	1	0.873	87.3
12. A. E. Remick Pharmacal Co.	1	0.804	80.4
13. Schieffelin & Co.	1	0.975	97.5
14. The O. F. Schmid Chemical Co.	1	0.846	84.6
15. Sharp & Dohme	1	0.975	97.5
16. Sutliff & Case Co.	1	1.002	100.2
17. The Toledo Pharmacal Co.	1	0.900	90.0
18. Truax, Greene & Co.	1	0.899	89.9
19. The William A. Webster Co.	1	0.921	92.1
20. The Zemmer Co.	1	0.885	88.5

The United States Pharmacopeia (VII) assay method for Liquor Potassii Arsenitis was used in making these determinations.

pharmaceutical houses were the best, in spite of the fact that the less stable U. S. P. base was present in three specimens out of the five. About five of the others approached these very closely while the remaining five were more or less markedly inferior products, despite the fact that only one-half were made with the U. S. P. base.

The determination of zinc oxid[4] content denoted some variations from the required 20 per cent. standard; but in no case was the variation sufficient to warrant a charge of adulteration in any specimen.

The examination of zinc oxid ointment clearly points to the need of extemporaneous preparation by the retail pharmacist of preparations of this sort which are prone to deteriorate with age, particularly when exposed to changes in temperature such as are most likely to occur during transportation from the manufacturer to the jobber, the druggist or the physician.

4. While, with the exception of the Sharp & Dohme product, the non-fatty constituent in each case was found to be only zinc oxid, the estimations of the zinc content were unsatisfactory. Two methods were employed: (a) direct ignition and weighing of the residual zinc oxid, and (b) extraction of an ether solution of the ointment with dilute hydrochloric acid, evaporation of the acid precipitation of the zinc as basic zinc carbonate and ignition to zinc oxid. The results obtained by these methods, while permitting conclusions of variability given above, are not entirely free from error and hence are not reported.

FLUIDEXTRACT OF DIGITALIS

In view of the publicity which has been given the variability of digitalis preparations and because it is well known that a fluidextract of digitalis representing the

TABLE 5.—ACTIVITY OF FLUIDEXTRACTS OF DIGITALIS IN MILLIGRAMS PER KILOGRAM OF CAT

Firm.	Mg. Drug per Kg. Cat. Mg.*	Average. Mg.	Percentage Strength,† Per Cent.
1. F. S. Betz Co.	178 164	171	46.17
2. The Columbus Pharmacal Co.	115 126	120	65.83
3. Flint, Eaton & Co.	200 157	178	44.38
4. Eli Lilly & Co.	200 176	188	42.02
5. McCoy, Howe Co.	119‡ 111‡ 111‡	114	69.29
6. H. K. Mulford Co.	88 71	79	100.00
7. The National Drug Co.	193 145 160	166	47.58
8. The Norwich Pharmacal Co.	158 200	179	44.13
9. Parke, Davis & Co.	119 157	137	57.66
10. Pitman-Myers Co.	282 200 184 297	240	32.92
11. Ray Chemical Co.	260 280	270	29.25
12. A. E. Remick Pharmacal Co.	190 195 182	186	42.57
14. The O. F. Schmid Chem. Co.	141 147	144	54.86
15. Sharp & Dohme	136 139 144	140	56.43
16. Sutliff & Case Co.	276 249	262	29.70
17. The Toledo Pharmacal Co.	135 184	160	46.74
18. Truax, Greene & Co.	166‡ 157‡ 196‡	155	50.97
19. The William A. Webster Co.	172 160 196	176	44.88
20. The Zemmer Co.	216 286	251	31.47

The average of the preparations of the "physicians' supply houses" is 197 mg. per kilogram of cat.

The average of the preparations of the "regular" pharmaceutical houses is 136 mg. per kilogram of cat.

Four c.c. of each of Nos. 1, 2, 3, 7, 8, 10, 11, 12, 14, 16, 17, 19 and 20 were taken, mixed and diluted with 5 per cent. alcohol and enough normal salt solution to make each cubic centimeter represent 20 mg., and this was tested on cats in the same way. The results of three tests were 187, 156 and 241 mg., an average of 195 mg. per kilogram.

* The figures in this column show the milligrams of drug represented by the volume of the preparation taken required for 1 kg. cat to produce death.

† The figures in this column were obtained by calculation from the values "Mg. Drug per Kg. Cat," taking the strongest preparation as 100.

‡ Tincture.

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full strength of the drug is difficult to prepare, this examination was made to include fluidextract of digitalis. The results of an examination promised to be the more interesting because the firms which supply the drug trade have laid much stress on the quality of their products, which are claimed to be physiologically assayed. The smaller houses, on the other hand, unless they purchase their supply elsewhere, may be assumed not to standardize their digitalis preparations. Accordingly fluidextract of digitalis was ordered from the "physicians' supply houses" included in the list and also from four pharmaceutical firms. While all of these firms agreed to furnish fluidextract of digitalis, and while in each case fluidextract of digitalis was the item set down in the invoice, in two cases the preparations sent were labeled "Tincture Digitalis, U. S. P." While they were examined and are included in the list, it should be borne in mind that a reliable tincture is more easily made.

The examination of the digitalis preparations was made in the Loomis laboratory of Cornell University, under the direction of Dr. R. A. Hatcher, the "cat method" of Hatcher being used for the tests. Table 5 gives the results obtained.

The demonstrations represented in Table 5 were made with the understanding that exactness was not necessary, it being desired to know whether or not the specimens represented a good quality of digitalis. When such enormous variations in activity are dealt with as are shown between the several specimens it matters little whether or not a very exact figure for any one preparation is determined, and hence the results reported are sufficiently exact.

The table confirms the generally held belief that commercial digitalis preparations vary most widely, for it is seen that the H. K. Mulford preparation, the most active, is four times as active as the weakest, that of the Ray Chemical Company. Even the four preparations of the pharmaceutical firms, which may be assumed to have been checked by physiologic assay, show a variation of more than 100 per cent. in strength. The activity of these specimens is such that only the fluidextract of the Columbus Pharmacal Company and of the H. K. Mulford Company fully represent a digitalis of good quality.

While the products of the four "regular" pharmaceutical houses (Eli Lilly & Co., H. K. Mulford Company, Parke, Davis & Co., and Sharp & Dohme) show a wide variation, the product of Eli Lilly & Co. having only 42 per cent. of the strength of the Mulford preparation, the products of the "physicians' supply houses" show a lower and still wider range of strength. Here the strongest fluidextract has a strength of 65 per cent. of the Mulford product, while the lowest has a strength of but 29 per cent. Since there is no official standard for digitalis preparations, and in view of the fact that the physiologic methods employed by pharmaceutical houses are in general claimed only to guarantee uniformity for the product of a particular firm, no sharp conclusion can be drawn from this investigation. It does show, however, that in general the products of the "physicians' supply houses" are less active than those obtained from the pharmaceutical firms.

CONCLUSIONS

Although the examinations reported in the preceding do not cover a wide field, they are sufficient to show that the random charge of sophistication and adulteration which has been repeatedly made against "physicians' supply houses" is unjustified. It shows, on the contrary, that, as has been argued before, standard drugs are likely to be of fair quality. On the other hand, the examination does show that the products put out by this class of firms, without being sold at a materially lower price, are less reliable as regards uniformity than those of the pharmaceutical houses. In other words, while "physicians' supply houses" do not deliberately adulterate or sophisticate their standard drugs, their products are evidently produced by those who are less competent and less skilled than are those of the "regular" pharmaceutical houses.

A discussion of the products of pharmaceutical houses would be incomplete without reference to what appears to be the highest aspiration of pharmaceutical manufacturers, namely: a long list of "specialties" and "elegant pharmaceuticals." When one compares this class of preparations as put out by the two classes of firms one is struck with the fact that the specialties of the "physicians' supply houses" are a little more unscientific, a little more devised to mislead or cheat the user, are a little more brazen in their imitation of fraudulent and worthless proprietaries and more deliberately aimed to satisfy the unthinking physicians than are those of the "regular" pharmaceutical manufacturers.

While the specialties of the "physicians' supply houses" do not differ radically from the specialties sold by the "regular" pharmaceutical houses, their use is more likely to be uncritical. For this reason they are a constant invitation to the dispensing doctor to shirk the expenses of keeping in stock and the labor of selecting the medicines which his patient should have, and instead to treat all diseases with a few of the "shotgun" prescriptions which he may have bought.

535 North Dearborn Street.

ABSTRACT OF DISCUSSION

DR. B. FANTUS, Chicago: The report of Professor Puckner shows how valuable the work of the Council on Chemistry and Pharmacy is. It seems to be maid-of-all work. It shows, too, how absolutely fair the Council is in its reports. As there is a danger, perhaps, that this assembly might be taken to be in favor of dispensing by physicians, I offer the following resolutions for your consideration:

WHEREAS, Dispensing by physicians is liable to lead to inadequate medication by restricting the practitioner to a generally very limited stock of drugs; and

WHEREAS, The physician, unless he be also a pharmacist, is not qualified by training or experience to judge of the purity and strength of the drugs he dispenses, or to take care of their proper preservation, or to prepare them for that form of administration most suitable for the patient's needs, making individualization in treatment impossible; and

WHEREAS, The public is insufficiently safeguarded against dangerous and even fatal mistakes, when only one mind and hand stands between the poison and the patient, therefore be it

Resolved, That the American Medical Association advise its members against dispensing, excepting in cases of emergency or when the services of a properly qualified pharmacist are not available.

DR. RAY L. WILBUR, San Francisco: We could not as a section put ourselves on public record as favoring this resolution. We could only recommend it to the House of Delegates for their action.

DR. M. I. WILBERT, Washington, D. C.: Substantially the same suggestion as Dr. Fantus proposes is made in the Code of Ethics adopted by the American Medical Association at Atlantic City last year and embodied in the "Principles of Medical Ethics."

DR. RALPH ST. J. PERRY, Farmington, Minn.: In order to aid discussion I second the motion.

DR. ALEXANDER S. VON MANSFELDE, Ashland, Neb.: I am sorry the gentleman seconded the motion. We know how very little we know; let us not publish the fact to the world at large. I warn the gentleman that unless he withdraws his second I will move the laying of that motion on the table, because it is injudicious.

DR. RALPH ST. J. PERRY, Farmington, Minn.: I am glad that I seconded that motion; otherwise we should not have had that open confession. I withdraw my second. This subject has been discussed in *The Western Druggist* and *N. A. R. D. Notes;* the journals have been rampant on the question of double standards of the drugs put up by the manufacturing pharmacists, asserting that they put up one grade to supply the dispensing doctor and another to supply the pharmacist. When I go to the editor and say, "I am a dispensing doctor and I want to know the manufacturer who puts up two grades, one for the dispensing doctor, an inferior grade, and another for the pharmacist, a superior grade; tell me which one of the manufacturing firms puts out the poor quality of drugs for the physician and which puts out the standard stock for the druggist," not one of them will give names. Professor Remington and others of the older members will recall that that same question relating to quinin pills was raised years ago. The societies and journals were burdened with papers detailing the differences in strength in various quinin pills and these shortages were represented by giving figures for the firms manufacturing the pills. There was not one analyst who had backbone enough to give the names of the firms. Professor Puckner has shown in THE JOURNAL that certain drug-houses are manufacturing drugs which are not up to the proper strength. Now when Professor Puckner publishes these statements we should like to have him name the man. He gave two or three instances in which the drugs ran below the standard. He did not say whether that was a sporadic or a chronic accident. Was more than one test of the same product made? I want to know whether the low standard was an occasional or a constant condition.

DR. F. J. WULLING, Minneapolis: This question of inferiority of tablets and pills is as old as the hills. The question that we should concern ourselves with is: Are things getting better or are they at a standstill? Are drugs of to-day more reliable, more efficient than they were ten or twenty years ago? If so, conditions are getting better; if not, something should be done, and a body like this should see that standards are laid down and then observed. Has Professor Puckner noticed improvements?

PROF. W. A. PUCKNER, Chicago: I have given only an abstract of the work, and when the entire report is published the source of each drug examined will be given. Whether or not the variation is sporadic I am unable to say at this time. The work was taken up because of the insistence on the pharmaceutical press during the last year of the utter worthlessness of the drugs supplied to physicians by supply houses. The examination was based on a single specimen bought from the firm. It may have been an accident. The particular case of fluid hydrastis surprised me as being below standard, inasmuch as it was the product of a manufacturing house that is generally believed to stand high. I was informed by Professor Clark of the Illinois School of Pharmacy that he also had examined a specimen and found it of distinctly inferior quality. It is quite likely that he obtained a sample from the same barrel my sample came from. I believe that the reports from the chemical laboratory have done something in the direction of improvement. It is to the credit of no firm to be found wanting and it will, no doubt, cost a firm a good deal in loss of prestige to have its products found inferior. I believe that no firm has deliberately adulterated. The amount of money to be gained in that way is insufficient. Standard drugs have improved decidedly. On the other hand, some work done in the laboratory with complex mixtures—things which were utterly worthless anyhow—has been published of late, including a third examination of a certain tablet, the investigation covering three years. These firms have done practically nothing to improve their products, evidently thinking that any physician who is fool enough to prescribe such mixtures does not deserve to get good drugs. The same I think can safely be said also of the worthless drugs supplied to the physician who prescribes them. He is not competent to know the difference and he does not care, and the pharmacist does not care either. I think that the high-grade drugs have improved decidedly.

SYPHILIS AND THE NERVOUS SYSTEM*

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If all that has been written on the subject of syphilis were collected and made readily accessible a lifetime would probably be too short in which to peruse it. What excuse have I then for adding to it? Have I something to say that will add to the sum total of our knowledge of it, and which shared with you will combat the disease more successfully? I have definite views concerning the treatment of syphilis based on a very large experience with the important clinical display of syphilis, that of the nervous system, which are not generally accepted, but which should be accepted that syphilis may be successfully treated. I do not mean to say that these views are original, for I know that they are taught by many progressive syphilologists. They are not held by the rank and file of the profession, however, if I may judge from an extensive contact with them.

The treatment of syphilis has entered a new era; first, because we have a test for its detection and, second, because we have had added to our means of combating it a curative agency that equals and probably exceeds mercury. Although skeletal and visceral syphilis are not so flagrant in their display as they were a hundred or even fifty years ago, because of the universal conformity to most of the laws of hygiene, syphilis is still a scourge and a pestilence, a menace to the health and efficiency of every nation.

Fortunately we need not concern ourselves with the origin of syphilis. Each European nation accused the other in turn of carrying the disease to its shores and all accused America. What we really know about it is that Girolamo Fracastorio (1483-1553), a Veronese physician and poet, gave it the name and described its origin, course and treatment in hexameter verse. The hero of the poem, a shepherd, Syphilus by name, in the employ of King Alcithous, has blasphemed the Sun and this deity in a moment of wrath strikes him with the disease of which Venus has had a monopoly in modern times:

> A Shepherd once (distrust not ancient Fame)
> Possessed these Downs and Syphilus his Name,
> A thousand heifers in these Vales he fed,
> A thousand Ewes to those fair Rivers led.

He is cured of the disease by the nymph Americi (America) who administers guaiacum. This poem, which deserves to be read even to-day, is apparently well-nigh forgotten save by a few litterateurs and physicians. A translation of it is to be found in the third part of Dryden's "Miscellany." The poem seems indeed to have been widely read and to have been given serious consideration. The worst that can be said of it, comments Professor Saintsbury, is that it could have been done much better in prose a criticism that may be made with even greater justice of much modern English poetry—"The Widow in the Bye Street," for instance.

* The oration in medicine before the Illinois State Medical Society held in Peoria, Ill., May 22, 1913.

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The disease presented itself to Fracastorio and his contemporaries as a terrible epidemic quite independent of its occurrence from individual misconduct. It is for this reason that he and his literary successors were able to treat it in an impersonal way much as they might treat small-pox or scarlatina. No odium of profound and disgusting personal immorality attached to its possession such as is attached to it to-day.

When it began to be realized that syphilis was a disease that had its origin in sin and its cause in what we are pleased to call immorality, then it became a tabooed subject. No newspaper dared print the word, it was never heard save in medical discussion, and even daring social workers in the field of hygiene usually felt obliged to speak of it as lues, which only the more sophisticated of their auditors understood at once, or, if they desired to be still more refined, as the Fracastorian malady. Two years ago Harvard University announced a series of twenty lectures to be delivered in "popular" style for the edification and benefit of the public. Among them was one on syphilis. It is said that no newspaper in the town which the Brahmins love to have called the Athens of America dared print the name of the most unmentionable of all subjects. Now all this is changed and Brieux, a litterateur long without honor in his own country, though now a member of the French Academy, did it. He wrote a dramatic piece called *Les Avariés*—"Damaged Goods." Before the play begins the manager appears on the stage and says, "Ladies and Gentlemen: I beg leave to inform you that the object of this play is a study of syphilis in its bearing on marriage." Then the actors and actresses proceed to give the most meticulous account of its diagnosis, the culpability of the husband, the infection of the wife, the transmission to the infant, the inoculation of the wet-nurse and so on. This play ran in New York for two months or more a short time ago, and I have heard temperate, conventional individuals say that they thought it should be given at Vassar, at Smith and at Bryn Mawr colleges. Be that as it may, the taboo has been removed, and, although we probably shall not hear syphilis discussed at the dinner table, as we do most human ills, and with avidity if they happen to be surgical, there is no doubt that it will be considered good form to instruct the laity, plainly and openly, concerning the disease and its capacity to bring incomparable misery to its victims.

But in addition to instruction of the laity, our medical students must be properly instructed. It is safe to say that in no medical college or university of this country is the subject of syphilis properly or adequately taught. In every instance it is included under the caption of dermatology or genito-urinary diseases. It has comparatively small relationship to the former and practically none to the latter. The subject of syphilis properly taught must be done by the general clinician and internist who may also be dermatologist, neurologist or even ophthalmologist, but he will never grasp the problem of syphilis unless he knows it as it affects all the organs and tissues of the body.

Syphilis is a disease due to the infection of the body by a thin, spiral organism called *Spirochaeta pallida*, whose cycle of development has not yet been satisfactorily established. Very little indeed is known of its life history. It may or may not produce what is called a characteristic lesion at the point of inoculation, namely, the Hunterian chancre. Certain it is that many physicians still believe that it is necessary that a chancre with indurated base and other so-called characteristic features must exist if the individual becomes inoculated with syphilis. This is a pernicious belief. Inoculation with syphilis need not and often does not cause a "characteristic" lesion. It is well known that a certain time elapses between inoculation and systemic infection, a variable one. When it enters the vessels and the lymphatics its choice is apparently the walls of the lymphatics, from which it enters the intercellular spaces of the tissues. It is found especially with mononuclear infiltration, and Metchnikoff believes that it exerts a chemotactic influence on those cells.

The prevention of syphilis is in reality one of the most urgent and important problems, from a hygienic and economic point of view, that the physician can set himself. It is a subject to which many earnest men and women are devoting their energy. Their efforts must be barren until the light of popular education or of enlightenment bathes the subject. This aspect of the subject cannot be considered here. It is the syphilitic diseases of the nervous system to which I invite attention. There are diseases of the brain and spinal cord, their coverings, linings and blood-vessels that are caused solely by syphilis. They constitute the bulk of all organic nervous diseases. These diseases are tabes, paresis, certain forms of myelitis and softening of the brain and spinal cord, meningitis, endarteritis and gummatous formation constituting tumor. Each of them, it matters not what the seat or extent of the morbid process, causes symptoms which taken together constitute well-defined clinical entities, and as such may be diagnosticated with readiness and certainty. Many other disorders of the nervous system and especially functional ones, neurasthenia, headache, states of unattributable depression have, since the introduction of a positive test for the existence of syphilis, been shown to be dependent on this infection.

Not so many years ago it was taught that involvement of the nervous system was a late manifestation of syphilis. Now we know that this is not so. I shall not detain you with statistics to uphold these statements but they have been published by myself and many others. Nervous diseases, to be sure, do not occur during what is often called the florid stage of syphilis, that is, during the time that the mucous membrane and cutaneous manifestations usually occur. It is during this period however that the parasite invades the lymph-spaces and channels of the nervous system and begins the warfare which for years may be so silent and its conduct so insidious that the victim remains unconscious of it. The most serious of the organic diseases of the nervous system, encephalitis, myelitis, cerebral and spinal endarteritis, may occur during the first months of the syphilitic infection, and diseases such as tabes and general paresis, which are exclusively syphilitic in their causation, may and often do display their initial symptom within five years after the date of infection. If you turn to your text-books and encyclopedias of medicine you will find that tabes and general paresis are referred to as parasyphilitic or metasyphilitic diseases, and nearly every author will discuss the probability that there is some other cause than syphilis for these diseases. But the day of such designation has passed. Tabes and general paresis are syphilitic diseases and the dictum that syphilis produces a "characteristic" inflammatory reaction, namely, the granuloma must be given up. Before we had a reliable test for syphilis and before we had given a specific valuation to the information obtained from study of cerebrospinal fluid, we were obliged to use such terms as parasyphilis (which means pertaining in an indirect or remote way to syphilis) or

metasyphilis (transformed from syphilis) because all pathologists were agreed that the syphilitic pathologic change is a characteristic one. The lesion of tabes and of general paresis is as far removed from the "characteristic" as can possibly be and now that Noguchi and Moore have demonstrated the existence of the *Spirochaeta pallida* in the lesion of general paresis it will have to be admitted that such lesion is syphilitic. Indeed, the conception of parasyphilitic disease and metasyphilitic disease, namely, that the syphilitic virus underwent some transformation before it caused the tabes or general paresis, has been a menace to the successful treatment of these diseases, for how could one justify himself in giving antisyphilitic treatment if the *de facto* determining cause was not the syphilitic poison acting as such? I believe that nothing has done so much to stultify our efforts in the treatment of syphilis and syphilitic organic nervous diseases as the sort of rule of thumb which called for the giving of mercury in the second stage, potassium iodid in the third. For the most common of all diseases that flow out of syphilis, organic nervous diseases were considered to be tertiary manifestations of the disease and were therefore often never given a real antisyphilitic. It will advance the treatment of syphilitic diseases of the nervous system if we now and for all time give up the designations "parasyphilitic," "metasyphilitic," "tertiary syphilis" and the like. Syphilis is syphilis just as indisputably as a good cigar is a smoke, and it matters not when or under what veil it is encountered.

The measures that permit us to say thus positively that syphilis is syphilis at all times are popularly known as the Wassermann test of the serum of the blood, of the cerebrospinal fluid and its various modifications (the so-called Stern's method, Hecht's method, Noguchi's method) and the cytologic examination of the cerebrospinal fluid. The Wassermann reaction has been described many times since the discovery of the Bordet-Gengou phenomenon in 1901 on which it is based. Without entering here into a discussion of the nature of the reaction, it must be granted that clinically the test with but very few exceptions is pathognomonic of syphilis. It is highly probable that the reaction is not strictly specific, that the substance produced in the infected individual is not a true antibody, and that the so-called antigen is not a true antigen.

The specificity of the reaction is a most important matter. That a positive reaction follows in conditions other than syphilis is certain, but aside from such diseases as yaws, leprosy and trypanosomiasis, a positive Wassermann reaction is rarely obtained. Hoehne found a positive reaction but twice in the examination of 1,100 serums taken from healthy persons or from persons suffering with other diseases than syphilis and in neither of these two could syphilis be excluded. McDonagh, Mueller and Morawitz in reporting on 5,000 cases did not obtain a single positive result in any case from which syphilis could be excluded.

Since the opening of the Neurological Institute in New York, a hospital devoted exclusively to the study and treatment of nervous and mental diseases, the Wassermann reaction has been done by Dr. D. M. Kaplan, director of the clinical laboratory, upward of 10,000 times. Of these 10,000 analyses undertaken in the great variety of diseases that come to a hospital for nervous diseases, a considerable proportion of which are metabolic and visceral, about 28 per cent. have shown a positive Wassermann reaction. In practically all of these the Wassermann reaction of the serum and the evidences of syphilis in the cerebrospinal fluid were corroborative of the clinical findings. In view of the complexity of the reaction we never felt justified in pronouncing a case one of syphilis unless we had clinical corroboration.

The cerebrospinal fluid, which is secreted to the amount of about 150 c.c. a day by the chorioid fringes, is a pale, colorless liquid containing no cellular element except a few large endothelial cells and an occasional lymphocyte. On being heated, it becomes slightly clouded; this is due to a proteid called globulin. Traces of dextrose are found. Study of this fluid taken from patients suffering from organic disease of the nervous system, and especially from those that flow out of syphilis, shows that this fluid is altered in a way that is highly characteristic, indeed almost pathognomonic and which may be utilized for diagnostication.

In the first place, in all syphilitic diseases of the central nervous system the reaction of the cerebrospinal fluid to the Wassermann test is plus in the vast majority of instances, unless the disease has been influenced by treatment. It need not be plus, however, for a negative Wassermann reaction of this fluid does not necessarily speak against the existence of any of these diseases, especially if the cell-content, the proteid or the glucose is in excess. In all syphilitic diseases of the central nervous system the lymphocytes are increased to a variable extent from ten to a thousand or more to each cubic millimeter. The mononuclear elements predominate. The globulin is increased, the dextrose, which is normally present, may in very acute meningeal irritations be absent. From an examination of over 3,000 cerebrospinal fluids, Dr. Kaplan and myself have come to conclude that the formulary of Table 1 expresses approximately the alteration in the serum and in the fluid in tabes, general paresis and cerebrospinal syphilis:

TABLE 1.—SERUM AND FLUID ALTERATIONS

	Blood Wassermann	Cerebrospinal Fluid Wassermann	Cells	Globulin Excess	Fehling's Reduction
Tabes	+ as a rule; occasionally —.	+ or —.	numerous 20-100 or more	+ or —	+
General paresis.	+ ; rarely —	+	few 5-30	+	+
Cerebrospinal syphilis.	+	+	large number 100-1500	+	+

The treatment of syphilis by the rank and file of the profession of the present day consists in the administration of mercury by the mouth, usually in the form of the protiodid, kept up for a year, followed by the administration of mercury and iodid mixed in solution and kept up for another year, followed finally by the administration of potassium iodid alone in doses ranging from 10 to 60 grains or possibly even more, depending on whether or not there are any so-called "evidences" of syphilis. The patient then maintaining that he feels well or fairly well and having no outward manifestations of the disease is told that he is cured, that he may marry and procreate and that the disease is a thing of the past. I do not intend to say that there are not hundreds of patients afflicted with syphilis who are being treated otherwise than in this way. Unquestionably in every considerable city of the country and prob-

ably in many towns the diagnosis of syphilis is being made by the detection of the spirochetes, the infection of the blood is determined by the Wassermann reaction, and mercury and salvarsan are being given appropriately and the results of their action determined not alone by the disappearance of the clinical evidence of the disease but by a cessation of a positive Wassermann reaction in the serum of the blood. But I believe that for one case dealt with in this fashion, there are a score that are dealt with in the former fashion.

Now, this statement requires a discussion of five topics:

1. Is syphilis ever a local disease and is its only locus a true or Hunterian chancre?
2. Is the administration of mercury by the mouth a competent way of getting sufficient mercury into the system to kill the spirochetes in their lymphatic invasion?
3. Is potassium iodid in any way, shape or form a spirochetacide and therefore a true antisyphilitic agency?
4. What is the clinical value of the Wassermann reaction?
5. Is salvarsan or neosalvarsan an antisyphilitic remedy comparable in its efficiency with or greater than mercury?

My reply to the first question must be an expression of individual belief reflecting the opinion of such a competent authority as Fordyce. Unquestionably a variable period elapses between the time of inoculation and the time when the clinical evidences of syphilis display themselves in any of the tissues of the body. Likewise the Wassermann reaction of the serum of the blood is not positive in individuals infected with syphilis until after a period of from days to weeks following the infection. At one time it was the accepted teaching that during this period no constitutional treatment looking to the destruction of the syphilitic virus should be administered. Regrettably there is much teaching of this kind even to-day. Indeed, until recently it has been taught and to-day it is very widely believed that the syphilitic infection has its point of entrance only in the Hunterian chancre; that the chancroid and the herpes patch and the abrasion are never the point of entrance of the spirochetes. It has been amply demonstrated by inoculation experiments in animals that the system may be infected by the spirochetes without producing a so-called typical induration; and there is abundant, convincing evidence to show that the site of the inoculation in many instances in man displays only a "non-typical" ulceration. The fact that there is neither clinical nor serologic detectable evidence of infection does not means that such infection does not exist. There is a period of incubation in every infectious and protozoal disease. During this period of incubation the vital resistance of the protective tissues of the body is being overcome. Often, however, the evidences of infection are not to be found during this period in the tissues nor do they display themselves clinically; it still does not follow that the infection does not exist. It is not unlikely that one of the most important steps in our progress in treating syphilis adequately is to apply the spirochetacide, salvarsan or mercury, during this period of the disease. Success is much more likely to attend an attempt at destruction of the enemy's army if it is vigorously and overwhelmingly attacked during transportation and mobilization than if such action is delayed until it is securely mobilized and entrenched.

The reply to the second question that we have put to ourselves is not an easy one. Individually, I can answer it readily and to myself satisfactorily: The administration of mercury by the mouth is not an adequate and satisfactory way of administering the remedy. My opinion, however, may be biased by my experience, especially by my experience as a neurologist. Practically all the patients that I have seen with diseases having their origin in syphilis have been thus treated, and such experience gives me a conscious and unconscious prejudice against such mode of medication. Indeed, some years ago I published very considerable statistics which seemed to show that persons who had syphilis and who had been treated for it in the orthodox way (that is the way described above) developed nervous diseases that flow out of syphilis as soon after infection and as severely as those who had little or no treatment. This could be interpreted only as meaning that the orthodox treatment was as little efficacious in preventing certain syphilitic diseases as no medication at all. And this is my belief at the present time.

In opposition to this many will cite their own experience, which is that they have treated scores of cases of syphilis in the orthodox way and the patient has remained cured. Such antagonists will have greater difficulty, however, in maintaining their position than I. In the first place, once they know, and knowing believe, that the vast majority of organic affections of the central nervous system and its coverings are syphilitic diseases and that a very much greater proportion of cardiovascular diseases are syphilitic than were formerly believed to be, their verdict is contrary to the evidence. In the second place, unless they are in a position to know what has become of their syphilitic patients ten, twenty and thirty years after they have been under treatment, and of their descendants, their experience does not entitle them to give testimony. There can be no doubt that many cases of syphilis, possibly the majority, terminate in complete recovery while under such medication, but this cannot be construed as proof that the treatment cures the disease. It is more probable that the combative power of the protective tissues of the body is sufficient to overcome syphilis without aid in many instances. Moreover, there is always a tendency, in syphilis which has been treated, for the symptoms to disappear spontaneously, only to recur later. It is more than likely that there are definite strains or varieties of the *Spirochaeta pallida*, that there may be one strain that has a predilection for lodging in the lymph-spaces and channels of the central nervous system and another that has a sort of chemotaxis for the vascular system and for the skin. We have no means of proving at the present time that this is so, but it can scarcely be a coincidence that so many of the patients that come to me with syphilitic nervous diseases have been told by the physicians who treated them that they had very light attacks. One may have a light attack of diphtheria or of typhoid and be the legitimate recipient of congratulations but to have a light attack of syphilis is comparable to having an introduction to the executioner a month or a year before being guillotined.

It would be interesting and extremely useful to know what proportion of syphilitics develop nervous diseases, but so far no statistics on this subject have been at all convincing. If we can devise some system for reporting syphilitic diseases in the way diphtheria is now reported, without betraying the identity of the sufferer, we shall be in a position to get such statistics within another generation; by that time it is to be devoutly hoped that syphilis will practically be conquered.

In a paper read before the New York State Medical Society in 1910,[1] I made the statement that there was little evidence to show that potassium iodid was a real antisyphilitic agency. So far as my knowledge goes no evidence has since then been adduced. Despite this it is no exaggeration to say that tons of potassium iodid are administered every year to patients suffering from syphilis. I may say without any exaggeration whatever that scarcely a patient comes to me, either in my private practice or in my service at the Neurological Institute, bearing a letter from his physician requesting counsel as to the nature and treatment of the patient's ailment, in which it is not set forth that the patient has been taking potassium iodid in varying doses of from twenty to several hundred grains often for a protracted time. We have not given an ounce of potassium iodid in the three and a half years that the Neurological Institute has been in existence. During that time I have personally seen, studied and treated upward of six thousand patients, many of them victims of advanced nervous disease, many of them victims of serious nervous diseases having their origin in syphilis. No attitude could be more divergent. Either there must be tangible proof that potassium iodid is useful in the treatment of syphilis *per se* or my position must be right. I do not deny that potassium iodid is an extremely useful agency in dissipating, disintegrating and absorbing certain pathologic tissues which are the result of the activity of the syphilitic virus. I likewise readily admit that in the treatment of the granulomas of late syphilis the iodids are of the greatest value in restoring patency to blood-vessels occluded by tissue which results from the activity of the syphilitic virus so that the active spirochetacide can reach the real disease and its cause.

In a peculiarly distressing book, recently published, entitled "The Private Life of Henry Maitland," in reality a meticulous statement of the moral infirmities of George Gissing, which justifies the saying "God save us from our friends," Morley Roberts, the shameless perpetrator of the work, in a desire for self-glorification, quotes a letter from Gissing to his physician:

> **You remember that patch of skin disease on my forehead? Nothing would touch it; it had lasted for more than two years, and was steadily extending itself. At last a fortnight ago I was advised to try iodid of potassium. Result—perfect cure after week's treatment!**

This is the sort of thing that potassium iodid does for the manifestations of syphilis, but it leaves the disease itself untouched.

Reduced to a few words my protest is against the use of potassium iodid as a routine measure in the treatment of syphilis, and particularly against reliance on it to check the activity of the *Spirochaeta pallida*. To hold that potassium iodid, because of this, is an antisyphilitic agency, seems an absurdity. An ant raises up an anthill and a mole causes a deformity of your lawn but, if these are leveled off you are likely to forget that the ant or the mole may still be at work underground.

THE CLINICAL AND THERAPEUTIC VALUE OF THE WASSERMANN REACTION

I assume that it is generally admitted that the Wassermann reaction alone of the blood-serum of an individual who has had syphilis is sufficient evidence of active infection to justify antisyphilitic treatment, even though no clinical evidences of syphilis exist. This reaction in the blood-serum and in the cerebrospinal fluid is quite sufficient to justify such treatment when disease of the nervous system is suspected, especially if there is a lymphocytosis of the cerebrospinal fluid, even though there is no definite symptom of nervous disease. On the other hand a negative reaction does not mean that syphilis has not been or is not the cause of the symptoms or disease that is being investigated. During the latent period of syphilis, that is, the period in which there is an equilibrium between the host and the parasite, the reaction is often negative, perhaps as often as 50 per cent. of the cause. This equilibrium may cease to exist any day; then the negative reaction will become positive. This was one of our most enigmatic experiences when we first began investigating the serology of nervous diseases. A succession of negative reactions must be obtained before syphilis can be excluded as the cause of any nervous disease. A single negative reaction means nothing. Moreover, a negative Wassermann reaction frequently becomes positive after one or two injections of salvarsan. The salvarsan has a precipitating or provocative effect, so to speak, on the reaction. It is supposed to be caused by the setting free of the endotoxins contained in the bodies of the spirochetes which have been destroyed by treatment or by other causes. It must never be forgotten, nor should we lose the opportunity to recall it to ourselves, that in certain ancient infections apparently no amount of salvarsan or mercury will bring about a condition in which the blood-serum gives constantly a negative reaction. This is the rift in the lute.

IS SALVARSAN OR NEOSALVARSAN AN ANTISYPHILITIC AGENCY COMPARABLE IN ITS EFFICIENCY TO MERCURY?

In attempting to answer question five of our series, it is assumed that mercury is a competent agency to overcome syphilis. Confronted with such an assumption, the question as to why the discovery of salvarsan and the claims made for its efficacy, were hailed with such delight, becomes pertinent. The reason is that it is impossible in many cases, and probably always difficult, to administer a sufficient amount of mercury to cure the disease. The plan of its administration taxes the victim's patience and the resourcefulness of the physician. Administered in the most efficacious way, by inunctions, it is profoundly offensive, to say the least. Administered in the next most efficacious way, that is, intramuscularly, it is frequently painful and occasionally accompanied by disagreeable consequences. Administered by the mouth it is unreliable and tedious. Finally, it matters not in what way it is administered, it is difficult in many instances, perhaps indeed in most, if we consider the fact that many of the victims of syphilis are not only youthful but constitutionally disinclined to take responsibility, to induce the patient to remain a sufficient length of time under treatment to effect cure of the disease. When, therefore, there came from a person and an institution of authority in 1910, the announcement that a remedy then called "606," now called salvarsan and neosalvarsan, a cure for syphilis had been discovered, a cure that would accomplish these results in a brief space of time, there was profound satisfaction throughout the civilized world. In the three years that have elapsed since the remedy has been generally used an enormous literature has been published for and against it. I shall make no attempt whatever to review this literature; first, because I am

1. Collins, Joseph: Syphilitic Diseases of the Nervous System; Their Relationship to Inadequate and Improper Treatment of Syphilis.—The Journal A. M. A., April 23, 1910, p. 1349.

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convinced that the time has not yet come to do so, and, in the second place, because for the results of individual experience carefully tabulated, criterions are still sadly wanting. It is not sufficient, in order that the therapeutic use of salvarsan may be established, to report only the scores of cases that have apparently been cured. It matters not what the syphilitic disease may be.

I began the use of salvarsan at the Neurological Institute in June, 1910, therefore have been using it about three years. During that time I have given it to upward of 250 patients suffering with syphilitic nervous disease. A report of 75 of these cases was published[2] and an estimate was then attempted of its value

TABLE 2.—TABES DORSALIS

	Cerebrospinal Fluid					Doses		Cerebrospinal Fluid				
	Serum Wass.	Wass.	Cells	Glob.	Fehl.	No.	Gm.	Serum Wass.	Wass.	Cells	Glob.	Fehl.
1	+	+	209	+	+	2	0.6	+	+	133	—	+
2	+	—	273	+	+	2	0.6	+	—	11	—	+
3	+	+	135	+	+	1	0.6	—	—	26	—	+
4	+	—	33	—	+	4	0.6	—	—	35	—	+
5	—	—	33	—	+	1	0.6	—	—	9	—	+
6	—	—	61	—	+	4	0.6	—	—	13	—	+
7	—	—	53	—	+	4	0.6	—	—	0	—	+
8	+	+	6	—	+	4	0.3	—	—	0	—	+
9	+	—	2	—	+	3	0.6	+	—	4	—	+
10	+	+	96	+	+	3	0.3	—	+	13	+	+
11	—	—	54	+	+	3	0.6	+	—	34	+	+
12	+	+	50	+	+	2	0.6	—	—	21	—	+
13	+	+	137	+	+	3	0.6	—	—	0	—	+
14	+	+	94	—	+	9	0.6	—	—	36	—	+
15	+	+	131	+	+	4	0.3	+	+	160	+	+
16	—	—	42	—	+	4	0.6	—	—	0	—	+
17	+	+	90	+	+	4	0.6	—	—	17	—	+
18	+	—	142	—	+	5	0.6	—	—	48	—	+
19	+	+	110	—	+	3	0.6	+	+	31	—	+
20	+	—	94	+	+	2	0.6	+	+	91	+	+
21	+	+	94	+	+	2	0.6	+	+	68	—	+
22	+	+	253	+	+	1	0.6	+	—	59	+	+
23	—	+	33	—	+	3	0.6	—	—	25	—	+
24	+	—	273	+	+	2	0.6	+	—	11	—	+
25	+	+	128	+	+	1	0.6	—	—	60	—	+

SUMMARY

	Serum Wassermann.		Cerebrospinal Fluid				Globulin Excess.	
			Wassermann.		Lymphocytes.			
	Plus.	Neg.	Plus.	Neg.	Least No.	Greatest No.	Plus.	Neg.
Before	18	7	13	12	2	273	14	11
After	11	14	6	19	0	133	5	20

in syphilitic nervous disease. In that paper it was stated "that salvarsan had not replaced mercury, perhaps it never will. To-day these two agencies are used side by side, one often supplementary to the other. The therapeutic potentialities of salvarsan, however, are not yet fully shown. We are convinced that in the treatment of diseases of the nerves that flow out of syphilis, far better results attend the use of salvarsan than of mercury. Our added experience of the past year justifies us in repeating that statement. In order to show the results of treatment in syphilis of the nervous system, I have selected the last twenty-five cases of tabes and have tabulated the results in Table 2.

2. Collins, Joseph, and Armour, Robert G.: The Treatment of Syphilitic Diseases of the Nervous System by Salvarsan.—THE JOURNAL A. M. A., June 22, 1912, p. 1919.

HOW SHALL SALVARSAN BE ADMINISTERED IN SYPHILITIC NERVOUS DISEASES?

Nothing could be more inimical to the establishment of the real worth of salvarsan than the impression or belief that was widely disseminated in the first months of its use that one or two or three doses of salvarsan cured syphilis. It is possible indeed that such administration may cure some cases of syphilis, but it is possible, indeed certain, that syphilis is a self-eliminating disease in many instances. Once the spirochetes have become entrenched in whatever part of the viscera they find warmest reception, from whence they cause structural disease, then it requires repeated doses of salvarsan to cure, if salvarsan cures at all. The longer we use it the more we become conversant with its therapeutic capabilities, the more convinced we are that the dose of salvarsan must be repeated, not once or twice or three times but perhaps twelve or twenty times, and that its action or its effect must be supplemented by the use of mercury.

The plan of treatment which we adopt at present is to administer four doses of neosalvarsan (to men 0.9 and to women 0.5 gm.) intravenously every fourth or fifth day for four doses. At the end of this time examination is made of their blood and cerebrospinal fluid. If a profound impression has been made on these tissues an interval of a month is allowed to elapse without further treatment. If it has not, the patient is put on large and increasing doses of mercury administered in one of two forms, either the salicylate from one-half to two-grain doses suspended in benzoinal and given intramuscularly, or the mercuric bichlorid from one-eighth to one-half grain combined with cocain and given intramuscularly every day or every second day; depending on effects. After the patient has been under such mercurial treatment for a period varying from three to four weeks, the laboratory examinations are repeated. We then determine from a consideration of the objective features of the disease, from the statement of the patient and from the laboratory findings, when the salvarsan shall be repeated. Usually the series is repeated within three months. This plan of treatment is adhered to till the evidences of syphilis in the serum and cerebrospinal fluid disappear.

It is my belief now as it has been formerly that such remote evidence of destruction of certain pathways in the central nervous system as the Argyll Robertson pupil, and the abolition of the tendon-jerks, do not disappear even though the disease be arrested, which it frequently is, unquestionably.

DANGER ATTENDING THE ADMINISTRATION OF SALVARSAN

The dangers of salvarsan administration have been exaggerated. In nearly 1,000 administrations we have seen serious consequences follow the use of the remedy in one instance only. The patient, a young woman who complained of weakness, nervousness and general inability to work and whose blood-serum was strongly positive, developed a few hours after 0.6 injection of salvarsan intravenously the symptoms of transverse myelitis. She recovered completely in four months. The lesion in that instance was probably of the nature of an edema of the cord rather than inflammation. Severe toxic effects of the drug we have seen in four instances. They are those characteristic of acute arsenical poisoning. In only one of these were the symptoms so acute as to give rise to apprehension. They were readily controlled by the free administration of magnesium car-

bonate and by the use of colon irrigation and hot baths. I have had no cases of blindness which at one time it was freely said salvarsan was likely to cause. Nor have I seen nephritis follow its administration. I do not hesitate to administer it in patients who have optic nerve involvement as a result of syphilis.

THE EFFECTS OF SALVARSAN ADMINISTRATION

The immediate effects, that is within the twenty-four hours, are variable. Their occurrence depends in a measure on the preparation of the patient and the correctness of the technic of administration. When every precaution is taken some patients nevertheless have a rigor, slight rise of temperature, up to 100, and usually diarrhea within five hours after the salvarsan has been given. In one instance only have I seen a patient have a sense of cardiac oppression after the injection and I have never seen pain, headache or backache which was not more properly attributable to lumbar puncture.

The remote after-effects, that is, after a few days, is almost invariably a feeling of buoyancy, increase of weight, and what is meant by improvement of the general health.

The contra-indications to the use of salvarsan are nephritis and advanced nephritis and advanced arteriosclerosis.

All things considered the intravenous method of administration is preferable. Neosalvarsan has advantages over salvarsan insomuch as it is more easily soluble; it does not need to be neutralized; it is probably less toxic and it is simplicity itself to prepare (namely, mix it with 150 c.c. of sterile freshly distilled water). Despite these advantages my belief is that it is an antisyphilitic agency quite inferior to salvarsan and that the results we have obtained from the administration of neosalvarsan are not so good as those from salvarsan.

What then, finally, is my message? It is that syphilis is still a scourge to our people, hidden in the folds of the cloak of shame. Its occurrence must be checked by enlightening the people, men, women and youth. Its activity must be curtailed by prompt, vigorous and appropriate treatment. Its manifestations, it matters not in what tissues or organs they appear, constitute syphilis and it is this and not the disease of the organ or tissue that must be treated.

37 West Fifty-Fourth Street.

THE DEMONSTRATION OF THE SPIROCHAETA PALLIDA IN THE BRAIN SUBSTANCE OF LIVING PARETICS (FORSTER AND TOMASCZEWSKI)

UDO J. WILE, A.B., M.D.
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ANN ARBOR, MICH.

Following the demonstration by Noguchi of the *Spirochaeta pallida* in the stained specimens of the brain in general paralysis, Marie, Levaditi and Bauchowski[1] were able to demonstrate the organism from the fresh brain at necropsy by the dark field illumination. During the past month a cooperative finding of no less importance has been reported by E. Forster, assisted by E. Tomasczewski.[2] Employing the method of brain puncture, these authors have been able to demonstrate living spirochetes in the aspirated cortical substance. Their first report included six cases examined with positive findings in two. Twenty cases have been examined to July 28, and the organisms have been found in eight.

Through the kindness of Professor Forster I have been permitted to assist in two of these operations, to substantiate the microscopic findings, and to report herein the method of procedure.

The method of puncture is as follows: The patient's head is first shaved and the anterior portion of the skull thoroughly painted with tincture of iodin. The point of operation selected is over the frontal convolution from about ½ to 1 inch from the midline and well forward of the middle meningeal artery. The region is frozen with ethyl chlorid and a revolving dental drill is thrust quickly through the skin and deeper tissues. A few rapid revolutions of the drill in the hands of an assistant suffice to pierce the skull. The borer, or drill, is then removed and a long, thin trocar needle is inserted in the hole through the skin and bone; this is pushed firmly and deeply into the cortex. The wire obturator of the trocar is withdrawn and a syringe barrel is attached to the end of the needle. By suction, a small cylinder of brain substance containing both gray and white matter is drawn into the syringe, together with more or less fluid from the ventricle. This material, transferred to a sterile Petri dish, is examined at once with a dark field illumination. Thus far the organisms have been found in the gray matter only.

The operation is extremely simple. One has only to avoid the cerebral and meningeal vessels, and over the upper frontal region, well away from the midline, such danger is not encountered, nor is any important center disturbed by the operation. In all cases thus far examined, practically no pain has been experienced.

The discovery of Noguchi has once and for all effectually disposed of parasyphilis or metasyphilis, at least so far as the central nervous system is concerned. General paralysis is true syphilis of the brain. The finding of the organism in the living brain by Forster, besides finally establishing the proof of Noguchi's work, may, it is hoped, lead to important changes in the therapy of the disease, particularly in early cases in which the damage to the cortex is slight. The opinion has been expressed that the organism is not present in all cases of paresis. Considering, however, the small number of cases examined, with the relatively high percentage of positive findings (40 per cent.), together with the fact that in the brain puncture but a very minute portion of the cortex is examined, it would appear more rational to believe that the organism is present in all cases. A negative finding is obviously no indication of its absence.

It is not too much to hope that the demonstration of the spirochete in cases in which the cortical centers are as yet not greatly involved, and in the possible absence of other positive findings, may be followed by an arrest of the course of the disease under appropriate treatment.

It has hitherto been assumed by syphilographers that paretics could not transmit syphilis. The discovery, however, of the organism in the living brain of such subjects casts more than a shadow of doubt on this theory.

1. Marie, Levaditi and Bauchowski: Bull. méd., Paris, 1913, No. 34.
2. Forster, E., and Tomasczewski, E.: Nachweis von lebenden Spirochäten im Gehirn von Paralytikern, Deutsch. med. Wchnschr., 1913, xxxix, No. 26.

Knee-Jerks in Hysteria.—It requires great boldness on the part of any individual to diagnose hysteria in a case in which the tendon-jerks are absent. The plantar reflexes may be absent in a case of functional disease, hysteria, but the knee-jerks are increased.—J. S. Risien Russell, in *Clin. Jour.*

V. 6
1913

THE ADMINISTRATION OF SALVARSAN AND NEOSALVARSAN BY ENTEROCLYSIS

REPORT OF THIRTY-SEVEN INJECTIONS *

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AND
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NEW YORK

The method which we are about to describe is apparently unique, for in only three instances[1] have we found references in the literature to similar procedure.

The method which we use is simple, and the apparatus is not at all complex. The evening before treatment the patient is given a dose of saline cathartic to empty the bowels completely. He is then directed to take a rectal douche of soap solution about one hour before coming for treatment. If he is to be treated in the afternoon, we allow him to have a light breakfast and to take his enema one hour before the appointed time for treatment. If he is to be treated in the forenoon, he has no breakfast. We insist on three points: that the patient be hungry, thirsty and empty. He is then placed on the table and given a dose of morphin hypodermically, the dose varying from one quarter grain down, according to size and age. Children are given a dose of paregoric by mouth. This is given to relieve the patient of any possible irritation of the rectal tube, and also to aid in constipating his bowels. He is then placed on his right side, in the semiprone position, with the head of the table tilted down. We then pass the rectal tube or catheter, about a No. 20 French for adults, for a distance of about 12 inches or as far as possible. If the catheter is passed correctly it should be in the sigmoid flexure, as the rectum is supposed to be about 8 inches long in the average person. After the injection the bowels are constipated for from twenty-four to forty-eight hours. It may be of interest to note in passing that Dr. Chapin of New York has recently proved by means of the Roentgen ray, that suspensions of barium salts flow through the entire large intestine of children, to the ileocecal valve, when the suspension is just allowed to flow into the rectum through a short rectal tip or douche nozzle.

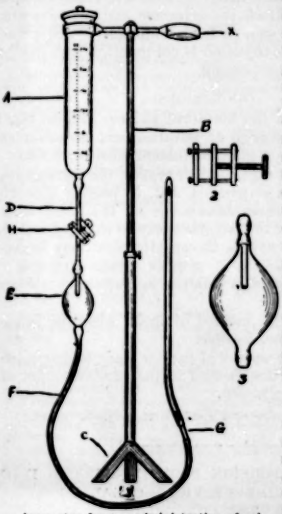
The solution is prepared exactly as in the intravenous method, except that we dilute to exactly 240 c.c. The reason for this will be stated further on. The solution is then poured into the apparatus.

APPARATUS

The apparatus is a cylindrical vessel (*A*) such as is found in the Boehm apparatus, graduated in 10 c.c., to 240 c.c., supported on an extension upright (*B*) and a solid base (*C*). Attached to this cylinder is a rubber tubing (*D*) about 6 inches long, at the other end of which is attached a special glass dropper-bulb (*E*), such as is used in the intravenous anesthesia apparatus, by means of which we can see the rate of flow. Attached to the distal end of the dropper-bulb is another piece of tubing (*F*) about 2 feet long to the distal end of which is attached a tapered glass connection (*G*). The rate of flow is easily regulated by a Hoffman cut-off (*H*), attached to the tubing (*D*), which allows a flow of any desired speed by the turning of a screw. This apparatus is so arranged that two patients can be treated at the same time, if a second cylinder, bulb, cut-off and tubing be attached to the apparatus at the ring (*X*). This improvised apparatus has given us complete satisfaction.

TECHNIC

The patient having been prepared as described is placed on the table and given his morphin or paregoric as the case may be. We then prepare the solution with warm water previously sterilized by boiling. The apparatus which was previously cleaned, either by allowing very hot sterile water to flow through it or by boiling, is filled with the solution. The rectal tube previously boiled is then inserted to about 12 inches, connected up to the tapered glass (*G*) of the apparatus, and the fluid allowed to drop. Now if the flow is regulated, so that it drops at the rate of 60 drops per minute, it will take just one hour for the 240 c.c. to pass into the patient. This is ample time for absorption and does not irritate the rectum, as we have proved a number of times. We have seen a very rapid injection retained and apparently absorbed with good effect, but we feel that we cannot recommend it. We also feel that the slow method which is practically a "Murphy drip" method is the better of the two.



Apparatus for the administration of salvarsan and neosalvarsan by enteroclysis.

We have given in this way thirty-seven injections to thirty patients. Of these injections five were with neosalvarsan and thirty-two were with salvarsan. We have seen no bad after-effects in general. One patient had a severe vomiting and weak spell, which necessitated a rest in the office for a few hours. This we believe was due to his having disobeyed our instructions, inasmuch as he had taken two glasses of beer and two hard-boiled eggs just before coming for treatment. Other than in this one case, we have seen no alarming ill effects. We have, however, seen a number of cases of moderate vomiting and urinary frequency following these injections. All of our patients were treated in our offices and returned home from there. The ages of our patients varied from 6 to 56 years. We have seen all the various manifestations of syphilis, such as chancres, genital and otherwise, rashes, condylomas, gummas and secondary and tertiary

* Read before the Yorkville (N. Y.) Medical Society, June 9, 1913.

1. Weill, A. J.: Morel and Moriquand, G.: Administration of Salvarsan by the Rectum in Children, Bull. Soc. de pédiat. de Paris, xiv, No. 7; abstr., THE JOURNAL A. M. A., Dec. 14, 1912, p. 2190. Kolmer, J. A., and Schamberg, J. F.: Experimental Studies on Administration of Salvarsan by Mouth to Animals and Man, Jour. Exp. r. Med., May, 1912. Bagrow, S. L.: Salvarsan Administered by the Rectum, Berl. klin. Wchnschr., Jan. 15, 1912, xlix, No. 3.

throat lesions, clear up with this method, and it is difficult to say whether or not the intravenous administration would have done so any more quickly.

Though technically this method may be attacked on the ground that we cannot demonstrate the exact amount of salvarsan absorbed, we feel that judging from our clinical work it is nearly all absorbed if given according to the directions previously laid down. Further, we believe that we are in a position to compare the results of this and other methods, and, judging from our work and the reports of those who tried our technic, that salvarsan and neosalvarsan by enteroclysis have a place in the therapy of syphilis and should be used whenever the intravenous method is refused or for any other reason cannot be given.

Theoretically one might object to the dropper bulb, because each drop falls through air. This objection may be valid for the first few drops, but as the air in the bulb is not renewed during the administration, there is little oxygen to attack the salvarsan and neosalvarsan. Again, as we have seen no toxic symptoms in this series, we believe that this objection is not practical and may be dismissed from consideration.

CONCLUSIONS

We believe from the literature and our studies that:

1. The administration of salvarsan and neosalvarsan by enteroclysis has a place in therapeutics.

2. In general it ought not to replace the intravenous method, because it is possible that, in passing through the intestinal mucous membrane or the liver after absorption, some of the salvarsan may be changed chemically, and in that way its therapeutic effect may be less per unit of dosage.

3. It should be used in children in preference to other methods.

4. It should be the method of choice when the intravenous method is not feasible.

5. The subject is worthy of further study to determine the exact place of this method in the administration of salvarsan and neosalvarsan.

1239 Madison Avenue—338 East Seventy-Ninth Street.

REMOVAL OF A FOREIGN BODY INTRODUCED INTO THE UTERINE CERVICAL CANAL TO PREVENT CONCEPTION

AIMÉ PAUL HEINECK, M.D., CHICAGO

Foreign bodies are sometimes introduced into the uterine cavity for the purpose of terminating an undesired pregnancy. Most frequently, they are employed in the absence of any legitimate indication.

These foreign bodies are responsible for a certain number of punctured and perforating wounds of the body and of the cervix of the uterus, inflicted by way of the vaginal canal. Some foreign bodies also have been inserted into the cervical canal to be retained more or less permanently; some of these devices are introduced and retained in the uterine cervical cavity merely to prevent conception. That their value as such is debatable, is amply demonstrated by what follows:

I have lately removed from the uterine cavity of several patients referred to me by other physicians a device which had been introduced into the uterine cervical canal with the positive assurance that conception was impossible as long as the "Jentsch self-retaining uterine tube" remained in the womb. Much to their astonishment and chagrin, these patients became pregnant, and aborted at various periods of gestation. In each of these cases, the uterine hemorrhage attending the abortion was unusually profuse, and in each, I experienced some difficulty in removing the device. In all of the cases, the placental and other ovular débris had to be removed instrumentally.

Mrs. F., aged 25, came into my service at the Jefferson Park Hospital on account of profuse uterine hemorrhage of about three days' duration. Interrogation and examination of the patient established the diagnosis of incomplete abortion. The patient could not believe that she was pregnant as she had purchased the self-retaining uterine tube and had had it introduced into the cervical canal on the assurance that it afforded absolute protection against the occurrence of pregnancy. A careful vaginal examination failed to detect the instrument, and the patient was in doubt as to its expulsion.

Expectant measures brought no relief, and the hemorrhage continuing, the patient was surgically prepared, anesthetized, and the cervical canal dilated. The so-called "protecting device" had escaped into the uterine cavity, and I could not have removed it without lacerating the uterine tissues, if I had not, to facilitate its extraction, made a complete unilateral division of the entire vaginal portion of the cervix. The self-retaining uterine tube was then removed, the uterine cavity emptied of the débris of a four months' ovum and the divided cervix sutured. Recovery was uneventful.

From my experience in the removal of these tubes, I would make the following statements:

1. Once inserted, they are difficult to remove; in two of my patients, a unilateral division of the vaginal portion of the cervix was required to effect the extraction of the instrument.

2. They do not prevent conception.

3. They not uncommonly induce abortion or miscarriage.

4. They may cause infectious phenomena productive of invalidism.

1809 South Trumbull Avenue.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

ELECTR-HG.—Electromercurol.—Electr-Hg is a colloidal suspension of mercury equivalent to 0.1 per cent. metallic mercury (Hg) and containing a small percentage of sodium arabate.

Electr-Hg is prepared by passing an electric current in the form of an arc between two mercury electrodes in distilled water. It is made stable by the addition of sodium arabate, which is prepared by acting on acacia (gum arabic) with hydrochloric acid precipitating the resulting arabic acid with alcohol and neutralizing the arabic acid with sodium carbonate.

Electr-Hg is an odorless, tasteless liquid appearing transparent and brown in color by transmitted light and opaque and gray by reflected light. The addition of potassium cyanide solution or of strong nitric acid yields clear, colorless solutions. The nitric acid solution responds to tests for mercury.

Actions and Uses.—Electr-Hg is claimed to have an action similar to that of the soluble salts of mercury. Locally it is said to produce no pain when given by intramuscular injection, and to leave no induration.

Dosage.—It is injected intramuscularly and intravenously in doses of 5 c.c. per day. For the intraspinal injection the dose is from 1 to 2 c.c., injected once a month or less frequently according to the effects it produces.

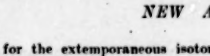
Electr-Hg is marketed in ampules only, in a non-isotonized condition. The package contains a physiologic salt solution

with directions for the extemporaneous isotonization of the preparation before the injection.

Manufactured by Comar and Cie., Paris, France. No U. S. patent or trademark.

Ampoules Electr-Hg, 5 Cc.—Each ampule contains electr-Hg 5 Cc. (75 minims).

MELUBRIN.—Melubrin is sodium 1-phenyl-2,3-dimethyl-5-pyrazolon-4-amido-methan-sulphonate,



the sodium salt of 1-phenyl-2,3-dimethyl-5-pyrazolon-4-amido-methan-sulphonic acid, differing from antipyrine, $C_{11}H_{12}N_2O$, in that a sodium-amido-methan-sulphonate group, $.NH.CH_2.SO_3Na$, has replaced a hydrogen atom of the pyrazolon group.

Melubrin is prepared by allowing a solution of formaldehyd bisulphite to act on 1-phenyl-2, 3-dimethyl-4-amido-pyrazolon, and purifying the resulting product by recrystallization.

It is a white, odorless, almost tasteless crystalline powder, readily soluble in water, but slightly soluble in alcohol. The aqueous solution is neutral in reaction but unstable.

If about 0.2 Gm. of melubrin dissolved in 5 Cc. of water be boiled with 3 Cc. of diluted hydrochloric acid, sulphur dioxid and formaldehyd will be liberated.

If ½ of the solution thus formed be treated with 3 drops of sodium nitrite solution and 5 Cc. of an alkaline solution of beta-naphthol, a red precipitate will be produced.

If the remainder of the above solution be treated with 1 Gm. of sodium acetate and 15 Cc of a saturated aqueous benzaldehyd solution, a yellowish white, flocculent precipitate will be formed which, when washed and dried, will melt at 173 degrees.

If a small quantity of melubrin be moistened with hydrochloric acid, it will respond to the flame test for sodium.

If a 10 per cent. aqueous solution of melubrin be made alkaline with ammonia, saturation with hydrogen sulphide should produce no change.

If 0.5 Gm. of melubrin be thoroughly mixed with 4 Gm. of sodium nitrate and gradually heated, 4 Cc. of concentrated sulphuric acid added to the resulting mass, and the mixture heated till no further white fumes are produced, the resulting substance powdered and mixed with 10 Cc. of saturated stannous chlorid solution, no darkening should occur within 1 hour.

If 0.4 to 0.5 Gm. of melubrin be weighed to a platinum dish, treated with dilute sulphuric acid, and heated to constant weight, the sodium sulphate thus formed should weigh 0.2100 to 0.2250 Gm. for each Gm. of material used, representing a sodium content of 6.99 to 7.28 per cent.

Actions and Uses.—It is claimed that melubrin in ordinary or even large doses is not toxic. In moderate doses it is said to have almost no effect on the circulation or respiration. It acts as a powerful antipyretic in fever and is analgesic.

Melubrin is said to be useful in painful affections, such as sciatica and other neuralgias, and as an antipyretic in various febrile affections. It is said to have effects similar to salicylates in acute rheumatism.

Dosage.—1 to 2 Gm. (15 to 30 grains). The larger doses are recommended for the treatment of rheumatism. It is claimed that as much as 10 Gm. (150 grains) may be given daily.

Manufactured by Farbwerke vorm. Meister Lucius and Bruening, Hoechst, a.M., Germany (Farbwerke-Hoechst Co., New York). U. S. Patent No. 1,056,881. (March 5, 1913; expires 1930). U. S. trademark applied for.

ACNE VACCINE.

Cutter Laboratory, Berkeley, Cal.

Acne Bacillus Vaccine.—Acne Bacillus Bacterin.—Each Cc. contains 50 million killed acne bacilli suspended in physiologic salt solution with 4/10 per cent. trikresol. Dose, from 5 to 50 million killed bacteria.

BACILLUS COLI VACCINE.

Cutter Laboratory, Berkeley, Cal.

Coli Vaccine.—A suspension of the Bacillus coli communis in physiologic salt solution with 4/10 per cent. trikresol. Containing 50 million killed Bacilli coli per Cc. Dosage from 10 to 100 million.

PNEUMOCOCCUS VACCINE.

Cutter Laboratory, Berkeley, Cal.

Pneumococcic Vaccine.—Pneumococcic Bacterin.—A suspension of mixed strains of the Diplococcus pneumoniae in physiologic salt solution with 4/10 per cent. trikresol. Containing 50 million killed pneumococci in each Cc. Dosage, from 10 to 100 million.

STAPHYLOCOCCUS VACCINE.

Cutter Laboratory, Berkeley, Cal.

Staph-Acne Vaccine.—Staph-Acne Bacterin.—A mixture of killed staphylococci and of killed acne bacilli in physiologic salt solution with 4/10 per cent. trikresol; each Cc. containing 500 million staphylococci and 50 million acne bacilli or in like proportions in greater or lesser counts. Dosage from 100 million to 2 billion.

Staphylococcic Vaccine.—A suspension of the Staphylococcus aureus, albus and citreus in physiologic salt solution with 4/10 per cent. trikresol. A suspension of various strains of staphylococci containing about 500 million to each Cc. Dose, from 100 million to 1 billion killed bacteria.

BACILLUS PYOCYANEUS VACCINE.

Cutter Laboratory, Berkeley, Cal.

Pyocyaneus Vaccine.—A suspension of mixed strains of killed bacillus pyocyaneus, in physiologic salt solution with 0.4 per cent. trikresol, 1 Cc. containing about 50 million killed bacilli.

ANTIGONOCOCCUS SERUM.

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Antigonococcus Serum.—Marketed in a special syringe containing 10 Cc., with sterile needle.

ANTIMENINGOCOCCUS SERUM.

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Antimeningococcus Serum (Antimeningitis Serum).—Marketed in an aseptic glass cylinder containing 15 Cc. with special sterile needle and stylet.

ANTISTREPTOCOCCUS SERUM.

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Company, New York.)

Antistreptococcus Serum.—Marketed in an aseptic glass cylinder with sterile needle and rubber bulb connection; the cylinder contains 50 Cc.

Antistreptococcus Serum, Polyvalent.—Marketed in a special syringe containing 10 Cc.

ANTIPNEUMOCOCCUS SERUM.

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Antipneumococcus Serum.—Marketed in an aseptic glass cylinder with sterile needle and rubber bulb connections; the cylinder contains 50 Cc. Also in a special syringe containing 10 Cc., with sterile needle.

NORMAL HORSE SERUM.

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Normal Horse Serum.—Marketed in a special syringe containing 10 Cc., with sterile needle. Also in an aseptic glass vial, containing 100 Cc.

STREPTOCOCCUS VACCINE.

Cutter Laboratory, Berkeley, Cal.

Streptococcic Vaccine.—Streptococcic Bacterin.—A suspension containing in each Cc. 50 million of killed streptococci in physiologic salt solution with 4/10 per cent. trikresol. Dose, from 5 to 50 million.

Lederle Antitoxin Laboratories, New York City. (Schieffelin and Co., New York.)

Scarlet Fever Treatment.—This product is marketed in four syringes containing respectively, 50 million, 100 million, 200 million and 400 million killed bacteria. Also marketed in four packages of two vials, each containing 50 million, 100 million, 200 million and 400 million killed bacteria. Also marketed in 20 Cc. vials in four strengths, 1 Cc. containing respectively, 50 million, 100 million, 200 million and 400 million killed streptococci.

Scarlet Fever Prophylactic.—This product is marketed in a package of three syringes containing, respectively, 250 million, 500 million, and 1 billion killed streptococci from scarlet fever cases. The content of these syringes should be injected subcutaneously at intervals of seven days. Also marketed in a package of three vials, each containing respectively, 250 million, 500 million and 1 billion killed bacteria.

TYPHOID VACCINE.

Cutter Laboratory, Berkeley, Cal.

Typhoid Vaccine.—A suspension of killed bacilli in physiologic salt solution with 4/10 per cent. trikresol, containing 50 million killed typhoid bacilli of various strains in each Cc. Dosage from 5 to 50 million every 3 to 5 days.

Typhoid Prophylactic.—A suspension made from a single strain, viz., that employed by the United States Army. Each Cc. contains 1 billion killed typhoid bacilli. Put up in packages containing 3 bottles. Bottle No. 1 contains 500 million; bottle No. 2, 1 billion; bottle No. 3, 1 billion killed typhoid bacilli.

National Vaccine and Antitoxin Institute, Washington, D. C.

Anti-Typhoid Vaccine (Immunizing).—This vaccine is prepared according to the technic of Russel from the strain used in the U. S. Army. It is marketed in three syringes containing respectively 500, 1,000, and 1 billion killed typhoid bacilli; also in ampoules containing the same doses.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 Dearborn Avenue . . . Chicago, Ill.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

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SATURDAY, SEPTEMBER 13, 1913

DIFFERENTIAL IMPORTANCE OF THE ALCOHOL CONTENT OF THE BLOOD

We have not increased our information concerning the mechanism by which the body defends itself and decreases its susceptibility to simple chemical poisons to anything like the extent to which we have advanced our knowledge about immunity to bacteria and to foreign proteins. That the processes involved in acquiring resistance to the two classes of poisons are quite different seems to be established, and for the most part the simple poisons seem to be attacked by simple chemical processes, such as oxidation, precipitation or union with simple chemical radicals. There is no more marked illustration of acquired tolerance to a chemical poison than that furnished by alcohol, and in view of its significance for the general problems of immunity or adaptation, a recent study of the alcohol content of the blood during different conditions is of considerable importance.[1]

The author of this article, Schweisheimer, first took up the old problem of the normal occurrence of alcohol in the blood and tissues, concerning which there is disagreement. He found that human blood from subjects who have not had any alcohol does contain minute quantities of volatile, oxidizable substance, corresponding to about 0.003 per cent., a finding supporting results previously obtained with animal blood and tissues. Unfortunately, there seems to be no available method which will determine positively whether these minute quantities of volatile material really are alcohol or not, for there are other organic substances which might be present and, in the quantities in which they exist, indistinguishable. Schweisheimer believes that the material in question is, at least in large part, alcohol.

The alcohol content of the blood of persons in various stages of intoxication, on the other hand, is quite considerable, and in a general way corresponds to the degree of intoxication; but there is a striking difference in the curve of the alcohol content in the blood of habitual drunkards and of abstainers. In persons unaccustomed to alcohol the maximum proportion of alcohol in the blood is reached in from about one and one-half to two hours after drinking a considerable quantity of wine (about 1 liter of a wine containing 10.35 per cent. of alcohol), and remains at nearly the same concentration for about five or six hours, then gradually falls, and by the twelfth hour is nearly all gone. The habitual drunkard, however, shows a quicker rise in the alcohol content of the blood to a maximum, which is maintained for but a comparatively short time, about two hours, and then the curve rapidly falls to near zero. Furthermore, in the alcoholic subject the maximum content is much lower than with the abstainer given the same amount of alcohol. When the blood contains over 0.02 per cent. alcohol the subject may show symptoms of intoxication, and usually does when it reaches 0.05 per cent. With the dosage mentioned, the content of alcohol in the blood reached from 0.1 to 0.15 per cent. in some cases, while in drunken men brought into the hospital amounts from 0.12 to 0.23 per cent.[2] were found.

The analytic results agree well with the recognized features of the influence of alcohol on the accustomed and the unaccustomed, and indicate that the former in some way get rid of their alcohol more rapidly than abstainers. Presumably this is by a more active oxidation, but in what tissue or through what agency is as yet undetermined. The results obtained with non-drinkers, moderate drinkers and confirmed drunkards show a progressive ability to keep down the quantity and persistence of alcohol in the blood, indicating that this faculty is of gradual acquirement. As with equal concentrations of alcohol in the blood of drunkards and non-drinkers, however, the latter show much greater evidence of intoxication, it would seem that there are other factors to be considered. Probably the grave danger of acute alcoholism in the unaccustomed drinker lies especially in the long period during which the maximum alcohol content persists in the blood.

It would seem that the accurate determination of the alcohol content of the blood is not difficult or time-consuming when once the apparatus is set up and the necessary experience gained. This being so, there is a diagnostic measure offered which should be of much value in those puzzling cases of coma in which alcoholism is suspected. In every large city mistakes are repeatedly being made in these cases, often with serious results when a diagnosis of alcoholism and a jail floor are provided for a man who has a skull fracture, uremic coma or some other dangerous and perhaps curable condition. If a routine analysis of the blood for alcohol content were made before a diagnosis of alcoholic coma would be accepted, such mistakes could be largely eliminated. A single drink will give grounds for a diagnosis of alcoholism if the diagnostician relies on his olfactory sense alone, but it will not so raise the alcohol content of the blood as to warrant such a diagnosis.

1. Schweisheimer, W.: Der Alkoholgehalt des Blutes unter verschiedenen Bedingungen, Deutsch. Arch. f. klin. Med., 1913, cix, 271; abstr., The Journal A. M. A., March 1, 1913, p. 704.

2. In our abstract of this article through an error the figures were given ten times too high. The proportion should have been given "per thousand," instead of "per cent."

DIABETIC CONDITIONS DUE TO STARVATION

It has been known for some time that during a period of inanition the tolerance of animals for carbohydrate may be greatly diminished. Whether this is likewise true in the case of man cannot be stated with certainty so far as chronic starvation is concerned, for the observations on record are insufficient to permit of any convincing conclusion in the matter. When these phenomena of "starvation diabetes" were first noted it was suggested that the explanation lay in an inability of the organism to utilize sugar as efficiently during a period of inanition as during ordinary conditions of well-being. Obviously such a statement is at best hypothesis of the vaguest sort and fails to afford any concrete idea of the nature of the deficiency involved.

Not long ago, under the heading of "Acid Diabetes,"[1] we discussed the alleged influence of acids on the metabolism of carbohydrates. We spoke of the suggestion from von Noorden's clinic that even comparatively small quantities of acid introduced into the organism can "mobilize" glycogen in the body, giving rise in this way to hyperglycemia and a consequent glycosuria. The experimenters further believed that this sequence of events is quite independent of the adrenals, which have of late been called on to explain the genesis of diverse conditions leading up to elimination of sugar by the kidneys. In the case under discussion the liver was designated as the presumable point of the sugar-liberating attack by the acids.

From such an experimental starting point it was a logical sequence to inquire whether various pathologic conditions attended with a development of acid in the disturbed metabolic processes themselves, rather than the contribution of acid from outside the body, might not sometimes be responsible for glycosuric or diabetic phenomena like those described. We use the term "diabetic" here in the sense of lowered tolerance for, or utilization of, carbohydrates. And since in starvation such conditions may arise, it has been asked whether a pathologic development of acid might not be responsible. In the first medical university clinic in Vienna, Elias and Kolb,[2] following the lines of their earlier studies on acid and diabetes, have demonstrated that, in dogs at least, the "starvation diabetes" is actually accompanied by a greater acidity of the blood and by an unmistakable hyperglycemia, independent of adrenal perturbations. These consequences are apparently not attributable to defects of absorption or unusual permeability of the kidneys. They involve some process of intermediary metabolism and can be more or less effectively repressed by administration of alkali, the natural antagonist of acids.

A few years ago it would have seemed far-fetched to look upon starvation as anything fundamentally pathologic. The consequence of lack of food was assumed to be a purely negative one, in which certain physiologic processes ceased or slowed down. To-day, prolonged inanition, whether voluntarily induced or the enforced result of disease, is no longer to be regarded as a purely indifferent situation. Metabolism in starvation is admittedly abnormal.

1. Acid Diabetes, Editorial, THE JOURNAL A. M. A., July 5, 1913, p. 44.
2. Elias, H., and Kolb, L.: Ueber die Rolle der Säure im Kohlenhydratstoffwechsel, II. Ueber Hungerdiabetes, Biochem. Ztschr., 1913, lii, 331.

ERADICATING ROCKY MOUNTAIN SPOTTED FEVER

The work of clearing the mountains and valleys of the spotted fever district in Montana, inaugurated some years ago, is still being carried on vigorously. Since the death of Dr. McClintic, who contracted the fever while working in Montana, Dr. L. D. Fricks of the United States Public Health Service has carried on the work in the Bitter Root Valley. In a recent report in which he discusses the method heretofore employed in destroying the ticks, such as cleaning and cultivating the land, burning over foot-hills and slashes, killing small wild mammals, dipping domestic animals in solutions of arsenic, and removing ticks by hand from domestic animals, all of which are cumbersome and expensive to apply and only in a measure effective, Fricks[1] gives the results of some experiments with sheep as a means of eradicating the tick. The methods previously employed have been used for three years without greatly diminishing the number of ticks or the number of deaths from spotted fever.

The infection in its most virulent form exists in certain districts on the west side of the Bitter Root River, a region still in the primitive state. On the east side of the river, where the territory has been cultivated and where most of the efforts to eradicate the tick have been employed, there are comparatively no ticks; but in small portions of the territory on the west side the ticks exist literally in millions and their eradication by the methods named seems almost hopeless. It is found, however, that the ticks do not flourish for any considerable length of time in the region pastured by sheep. Experiments by Fricks and his assistants during the present year show some rather interesting results. As summarized in the report, 87 per cent. of 295 ticks placed in the wool of unshorn sheep were found dead. The majority of the ticks recovered from sheep grazing naturally over the tick-infested territory were dead. It is known that the fertilization of the female ticks takes place while on the larger domestic animals. Sheep seem to be particularly unsuitable for tick propagation and many of the females recovered from the sheep appeared not to have been fertilized. Comparatively few ticks, either dead or alive, were found on the sheep after they had been shorn. In this investigation only sixty-one sheep were employed. Fricks proposes to test the method still further in the coming season by placing a flock of two thousand sheep on some tick-infested range on the west side of the Bitter Root River

1. Fricks, L. D.: Pub. Health Rep., Aug. 8, 1913.

as early in the spring as possible and thus endeavor to determine on a large scale the possibility of tick eradication by this natural and inexpensive means.

The fatal character of this disease in otherwise extremely desirable agricultural and stock-raising sections of the country such as those of Montana, Idaho and Wyoming, makes it important that some means should be devised to get rid of the ticks. The experiments with the sheep seem promising and point to a plan of eradication feasible and easily carried out.

PROPRIETARY PRESCRIBING IN GREAT BRITAIN

The National Insurance Act, under which hundreds of thousands of people in Great Britain are now receiving what practically amounts to free medical service, has had one wholesome result. It has greatly diminished the sale of "patent medicines" and the prescribing of proprietaries. Under the rules adopted for the working of the act, the amount of money set aside for the payment of drugs works out at two shillings (forty-eight cents) for each insured person. To promote economy in prescribing, an arrangement has been devised by which one-fourth of this amount may be set aside to form a fund, which the doctors on the panel share, in case the twelve cents mentioned have not been required in the payment of druggists' bills. This has been called the "Suspense Fund," or, more popularly, the "floating sixpence." This, and the further fact that an official record is kept of all prescriptions written for insured persons, has naturally discouraged the prescribing of expensive proprietaries in cases in which the cheaper and equally efficient official drugs answer the same purpose.

The National Health Insurance Commission (Scotland) has issued a circular discussing the question of insurance practitioners prescribing, and insurance druggists dispensing proprietary remedies. The commissioners divide proprietary medicines into two groups: those whose composition is admittedly secret—popularly referred to as "patent medicines"—and those whose composition is, supposedly at least, made public—the so-called ethical proprietaries. The commissioners take the attitude that proprietaries of the "patent-medicine" type "are not proper and sufficient drugs or medicines in the sense of the National Insurance Act and should not be prescribed for or supplied to insured persons." On the other hand, the commissioners hold that the preparations included under the other group may be supplied by the druggist when prescribed by the physician. The commissioners assume, however, that physicians will not prescribe proprietary remedies "unless they look on them as possessing recognized advantages over pharmacopeial or other well-known non-proprietary preparations of similar composition and that they will, in prescribing, bear in mind that certain drugs which have such proprietary names figure also under other titles in the British Pharmaceutical Codex." This means, of course, that should a physician prescribe, for example, Urotropin or Cystogen instead of hexamethylenamin (Formamine, B. P. C.) the bill would be disallowed by the commission if the proprietary articles were sold at higher prices than their official equivalents.

Naturally the manfacturers of proprietary medicines in Great Britain are not feeling happy over the workings of the National Insurance Act. Naturally, too, those publications which derive a large portion of their advertising income from proprietary medicine advertisements are not feeling happy, either. In the case of medical journals, the publishers are between the devil and the deep, blue sea. If they come out openly and urge physicians to prescribe high-priced proprietaries in the place of the lower-priced official drugs, they are asking their subscribers to do something which is not only evidently unscientific but something, also, that directly affects the purse of the panel doctors. The publishers of drug journals, having only the proprietary interests to consider, naturally take the attitude that the insurance commissioners should allow payment for proprietary remedies if the physician sees fit to prescribe them. The attitude of the drug journals is fairly expressed in the closing sentences of an editorial in the London *Chemist and Druggist*, as follows:

> "If his [the physician's] experience of a drug or combination of drugs is built on proprietary forms he should be allowed to order what he believes to be best for his patient. It is obvious that secret remedies are in a different category from proprietary medicines, and medical ethics could not sanction the prescribing of medicines of the composition of which the prescriber is ignorant."

Those who have followed the work of the American Medical Association in its attempt to enlighten the medical profession on the subject of the proprietary evil in medicine will smile at the last sentence in the quotation just given. For if the searching investigations that have been made prove anything they prove that the most "obvious" fact of any is that "secret remedies" are not "in a different category from proprietary medicines." The difference is one of degree, not of kind.

THE ABSORPTION OF FAT-LIKE SUBSTANCES

One might well assume that the question of the mode of absorption of fats was at length settled, were it not that from time to time reports are made which shatter our confidence in the adequacy of the evidence at present available. Probably the most serious question at issue concerns the necessity of saponification as a preliminary to fat absorption. That fats and fat products enter the circulation exclusively by way of the lymph-channels is no longer seriously debated; but every now and then some element of doubt arises as to whether unaltered fat in emulsified form cannot find its way to the blood and tissues without being broken down and rebuilt by the intestine. At least two facts have contributed to the attitude of doubt. In the first place it is known that unusual food fats are sometimes represented in the fat

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depots of the body. This, of course, does not in any way preclude a preliminary digestive cleavage and a resynthesis of the same product; but it serves to keep alive the uncertainty as to the possible absorption of the fat as such. Secondly, it has been reported only recently from sources of repute that fat-like substances other than fats can be absorbed and find their way into the organism unchanged.

H. C. Bradley[1] of the University of Wisconsin is responsible for the statement that after feeding an emulsified mixture of a fat-like hydrocarbon—liquid petrolatum—with olive-oil, he found the resulting chyle fat to consist of about equal parts of the two substances. Bradley came to the conclusion that fats may be absorbed in emulsion—a reasonable assumption if such water-insoluble non-fats as mineral oil are actually thus absorbed. It was inevitable that a fundamental matter like this should be subjected to renewed investigation. To test the point with the fats themselves is not feasible, since fat transported as such could not be distinguished from the resynthesized fat of the chyle. Dr. Bloor[2] of the Washington University Medical School in St. Louis has accordingly made a study of the fats of the hydrocarbon oils sold under trade names. These products are distinctly foreign to the tissue of animals, and presumably cannot be utilized by them. To avert any criticism that might be raised by this fact, the cholesterol esters of wool-fat (lanolin) were therefore added to the list for investigation. The details of this well-conducted study, in which both the possible "utilization," that is, absorption from the alimentary tract, and the appearance of the foreign fat-like compounds in the lymph of the thoracic duct were taken into account, need not be rehearsed here. Despite the fact that the substances as fed were similar to food fats in many of their physical properties, that they emulsified well, were soluble in fats and fat solvents, and were liquid below body temperature, none of these products was found to be absorbed at all. This fact, of course, furnishes the justification for the use of mineral oil preparations as efficient laxatives, for which purpose they are already being employed.

Dr. Bloor draws some logical conclusions from his experiments, corroboratory as they are of numerous earlier physiologic researches. The slow passage of fats from the stomach, the abundant provision for hydrolysis and for the absorption of products thereof in the intestine, and the failure of absorption of fat-like substances which cannot be changed to a water-soluble form, make it extremely probable, he says, that fats can be absorbed only in water-soluble form and that saponification is a necessary preliminary to absorption. The significance of the mechanism involved is little understood; but in the light of the results reviewed, one of its uses would appear to be to exclude undesirable fat-like substances which would otherwise be carried in with the fats.

1. Bradley, H. C.: Proc. Amer. Soc. Biol. Chem., Jour. Biol. Chem., February, 1912.
2. Bloor, W. R.: On Fat Absorption. II. Absorption of Fat-Like Substances Other than Fat, Jour. Biol. Chem., 1913, xv, 105.

ENVIRONMENT AND THE SENSES

In an illuminating manner Dr. G. W. Crile has defended the thesis that environment has been the actual creator of man—that he is "a unified mechanism responding in every part to the adequate stimuli given it from without by the environment of the present and from within by the environment of the past, the record of which is stored in part in cells throughout the mechanism, but especially in its central battery—the brain."[1] As evidence for this contention respecting the influence of man's surroundings throughout the ages in making him what he now is we have the remarkable behavior of those receptive organs or mechanisms by which the stimuli or impressions of our environment are appreciated and translated into appropriate responses. These "nerve ceptors," to use Crile's expression, are numerous —some for the transmission of stimuli harmful to the mechanism—nociceptors; some of a beneficial character —beneceptors, and still others more highly specialized, which partake of the nature of the two and comprise the special senses.

There is a unique adaptation of the "nociceptors" to their stimuli. In the first place they are found most numerous where the body has been most exposed to harmful agencies. Thus there are many in the face, the neck and the hands and feet; in the bones they are lacking. Crile sees a significant proof that the environment of the past has been the creator of the man of to-day in the fact that our environment now has had added to it certain factors to which adaptation has not yet been made. For example, heat is a stimulus which has existed since the days of prehistoric man, while the Roentgen ray is a discovery of to-day; to heat, the nociceptors produce an adequate response; to the Roentgen ray there is no response. There was no weapon in the prehistoric ages which could move at the speed of a bullet from the modern rifle; therefore, while slow penetration of the tissues produces great pain and muscular response, there is no response to the swiftly moving bullet. Furthermore, the special way in which reactions take place is illustrative of the same feature of adaptation. Sneezing is a specific response made by the motor mechanism to stimulation of the nociceptors in the nose, while stimulation of the larynx does not produce a sneeze but a cough; stimulation of the nociceptors of the stomach does not produce cough, but vomiting; stimulation of the nociceptors of the intestine does not produce vomiting, but increased peristalsis. There are no nociceptors misplaced, we are reminded; none wasted; none that do not make an adequate response to adequate stimulation.

Crile further points out that inasmuch as the so-called special senses, in contrast to the "contact ceptors," promote functions such as the search for food and other activities devoted to self-preservation and perpetuation, one would expect to find that they control also those

1. Crile, G. W.: A Mechanistic View of Psychology, Science, Aug. 29, 1913, p. 283.

organs functioning in the production of energizing internal secretions. Over these organs—the thyroid, the adrenals, the hypophysis—the "contact ceptors" have no control, if we may trust laboratory evidence. Apparently no amount of physical trauma inflicted on animals will cause hyperthyroidism or increased epinephrin in the blood, while fear and rage are said to occasion them. As Crile says, this is a statement of far-reaching importance and is the key to an explanation of many chronic diseases such as are associated with the intense stimulation of the special senses in human relations. We are reminded that chronic emotional stimulation may fatigue or exhaust the brain, and may cause cardiovascular disease, indigestion, hyperthyroidism, diabetes and insanity even.

These purely mechanistic conceptions of some of the phenomena of the nervous system frequently run counter to the inherited traditions regarding the make-up and behavior of the human organism; but they are here to be dealt with and, what is more important, they are fruitful in practical suggestions derived therefrom.

Current Comment

THE "FRIEDMANN INSTITUTES"

Once more it should be stated that the so-called Friedmann cure for tuberculosis is utterly discredited. All reliable reports regarding the treatment of patients by Friedmann's method seem to show either that it is actually injurious or else that it is less efficient than other well-known and less dangerous means of treatment. While attention has already been called to the facts, it is worth while again to remind our readers that: 1. Dr. Mannheimer reported on the results of eighteen cases in New York in which the Friedmann "treatment" was used, and stated that in not a single one of the eighteen cases was there definite improvement to date that could be attributed to the "treatment." 2. A committee of some of the foremost physicians of Canada was appointed to watch the patients inoculated by Dr. Friedmann in the Canadian hospitals. These physicians made a similarly unfavorable report. 3. Dr. Anderson, acting under the authority of the United States government, watched the progress of the patients treated by Dr. Friedmann in this country. He also gave an unfavorable opinion as to the effect of the treatment. 4. The Friedmann "treatment" has been condemned by German physicians generally. 5. A report from the Rhode Island State Sanatorium on the results in 120 patients treated by the Friedmann method states that the patients "have shown none of the immediate and wonderful results reported by Friedmann," but that, "on the contrary, about 17 per cent. of the cases" are worse than they might have been expected to be under ordinary sanatorium treatment. This, and more is true, and yet the company which is exploiting this so-called cure is, apparently, able to find physicians who are willing to aid in this inhuman business. After all, this might be expected; it has always been possible to find men willing to do disreputable work, if sufficient financial inducements are offered. While we believe that the medical profession harbors but a small proportion of men of this type, it has some within its ranks who are willing to sell their birthright of professional decency for a mess of pottage. As has been previously said, the scheme of floating Friedmann institutes in different states successfully evades any reprisal on the part of the federal government. It therefore devolves on the various states to take such action as is necessary to prevent the heartless exploitation of the unfortunate consumptives within their borders.

THE CIRCULATION AND MUSCULAR EFFICIENCY

It is a familiar observation that the circulation is affected by muscular effort. One of the features commonly observed during muscular exercise is an augmented blood-pressure. No one seems to have paid any attention to the reverse situation, namely, the possible influence of altered circulatory conditions such as changes in arterial pressure on the efficiency of the muscular apparatus. Dr. Gruber[1] of the Harvard Medical School has investigated this aspect of the relation of the circulation to muscular ability, and particularly what effect changes of arterial pressure, either increase or decrease, may exert on neuromuscular fatigue. He has found that there are unmistakable evidences of alterations in muscular vigor demonstrable in an experimental way. When the circulation is improved by increasing the arterial blood-pressure the intensity of the contractions of skeletal muscles may be decidedly increased. This is true, however, only when the pressure is comparatively low to begin with, that is, below from 90 to 100 mm. of mercury. When the initial pressure is above this level little improvement ensues from a further enforced rise. Correspondingly, as the blood-pressure or the circulation is decreased, the vigor of the muscular contractions is lowered—here again this deterioration takes place only when the arterial pressure falls below the limits quoted before. Evidently there is a critical region of arterial pressure which conditions the most satisfactory working power. This is easily understood when we remember that fatigue products accumulate in a muscle when it is doing work. As the pressure rises, thus bettering the blood-flow through the active muscle, these products are carried away more rapidly, and more oxygen is brought to places where it is most needed.

THE PASSING OF THE BASEMENT HOME

This month the basement as a living-room will, officially, pass out of existence in Missouri. The movement is significant as the beginning of a realization by the legislative bodies of the country that the conservation of public health is the most important factor in political economy. The basement living-room, coupled with the daily toil of children in factories and sweatshops, has enormously increased the death-rate among the children of the lowly. Particularly related to a dark, damp basement home is a lowered condition of vitality, which predisposes to infection by tuberculosis

1. Gruber, C. M.: Studies in Fatigue, Am. Jour. Physiol., 1913, xxxii, 221

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and aids the vicious spreading of all the acute exanthems. If, in Missouri, where conditions of population are at most not crowded, such a step has seemed necessary, how much more must such a law be needed in the densely packed tenements of New York, Chicago and other metropolitan cities? Missouri, in the past, has insisted that she must "be shown"; here, indeed, she has pointed the way for her sister states.

THE HETEROGENEOUS LIPOIDS

The term "lipoids" is used as a generic name for those constituents of living cells which can be extracted by ether or similar solvents. It is a biologic rather than a chemical term, and includes substances of quite different chemical composition such as cholesterol, which is an alcohol, and lecithin, which is a complex fat. The impropriety of putting these two substances in the same class biologically is shown by recent research which demonstrates that they possess physiologic actions which are diametrically opposed to each other. The companionship of lecithin and cholesterol in the so-called lipoids of animal cells and tissues is appreciated by biologic chemists; but the differentiation of the respective rôles of these compounds in physiologic phenomena is still largely a task of the future. Observations derived from the field of the study of immunity reactions have furnished instances which lead one to believe that in many cases these two classes of compounds, so unlike in chemical structure despite their superficial resemblances in point of solubility and physical behavior, are antagonistic in biologic deportment. Thus in the phenomena of hemolysis, cholesterol and lecithins (phosphatids) undoubtedly manifest quite unlike reactions in relation to the red blood-corpuscles. A comparable illustration of similar differences has been furnished by a recent study of phagocytosis.[1] Cholesterol, even in small proportions, vigorously inhibits the phagocytic response of healthy leukocytes; but the inhibition can be completely overcome by means of lecithin. This furnishes only an added instance that warns us against drawing any sweeping conclusions as to the functions of heterogeneous mixtures of ether-soluble tissue components—responses that are referred to as "lipoid reactions" or "lipoid phenomena." Biochemical research has at length reached a point at which it becomes necessary to distinguish, as clearly as our present information will permit, between the physiologic behavior of the individual representatives of an interesting and potent group of tissue components.

1. Stuber, B.: Blutlipoide und Phagocytose, Biochem. Ztschr., 1913, li, 211

THE BEHAVIOR OF DIFFERENT FATS IN THE STOMACH

The fact that ingested fats distinctly retard both the secretory functions and the motility of the stomach is applied in a practical way in clinical medicine, particularly in gastric hyperacidity and hypersecretion. This raises the question as to whether or not there are any differences in the physiologic behavior of fats in the stomach depending on the quality, physical properties and texture of the material fed. The edible fats of commerce vary widely in these respects, ranging from the liquid olive-oil, on the one hand, to the more consistent mutton fat, on the other. A recent study of the subject[1] has made it clear that they are discharged from the stomach into the intestine at varying rates depending on their melting-points—an index of texture—and their viscosity. It matters little whether the fats are emulsified or not; they leave the stomach relatively more slowly if their melting-point is higher and their viscosity greater. Among familiar examples, therefore, olive-oil, beef fat and mutton fat are transported out of the stomach at a speed in the order mentioned, the harder mutton tallow being delayed longest under comparable circumstances of feeding. Fats administered in the form of emulsions along with other food are discharged from the stomach more promptly than emulsified fats administered in a comparable way. The delay in the release of fat is, in general, greater in the absence of other foods than when there is some dietary admixture. From the experiments which have been made it appears that fats are promptly released from any intimate mixture with other nutrients in the company of which they may have been fed; so that they tend to enter the intestine by themselves. The degree of inhibition which they exert on the progress of their companion food materials through the pylorus depends in turn on their physical properties: the more viscid fats retard the discharge of other (non-fat) foods less than the more liquid types. It follows, therefore, that the dietotherapeutist cannot only employ fats to suit his needs in relation to the performances of the stomach, but by exercising discrimination in respect to texture and state of emulsification he can also further modify or regulate the results which he is aiming to accomplish.

1. Tangl, F., and Erdélyi, A.: Biochem. Ztschr., 1911, xxxiv, 24. Von Fejér, A.: Einfluss des Schmelzpunktes nicht emulgierter Fette auf die Geschwindigkeit ihrer Entleerung aus dem Magen, Ibid., 1913, liii, 168.

THE CEREBROSPINAL FLUID IN CHEMICAL DIAGNOSIS

A chemical diagnosis of nervous and mental diseases can scarcely be said to exist at present. Doubtless there are changes in the composition and metabolism of the nervous tissues, particularly the brain, which attend marked pathologic alterations in the structures. But inasmuch as the entire nervous system comprises only about 2 per cent. of the total body in point of bulk, one can well understand why even very considerable contributions from an organ like the brain should make only an insignificant distinctive impression on the composition of the blood or urine or feces that represents the sum total of the physiologic transformations of all the other organs and tissues as well. The most promising outlook for the discovery of chemical diagnostic signs of alterations in nervous tissues lies in the direction of the cerebrospinal fluid which, bathing the tissues, is, as it were, the immediate representative of the waste and wear of the cells and ought to contain the products of their metabolism in most concentrated and least altered form. We need scarcely add that from the point of view of bacteriologic diagnosis the clinical examination of the cerebrospinal fluid has already proved to be of great

assistance in practice. Chemical studies of the cerebrospinal fluid have not been wanting in the past, and some of the alleged clinical tests that are in use are in reality chemical reactions. Broadly speaking, little progress has yet been made in this field, probably because the investigations have never been conducted on a sufficiently comprehensive scale to bring out characteristic alterations unquestionably attributable to definite diseased states. Dr. R. V. Stanford,[1] research chemist of the Cardiff City Mental Hospital in Great Britain, has reported a series of determinations of the specific gravity of the cerebrospinal liquor which suggests the existence of detectable differences associated with degenerative changes in the central nervous system. The probability that, in contrast with purely functional psychoses, progressive paralysis and severe dementia are accompanied by a loss of tissue substance is attested by the anatomic findings and also made likely by Stanford's observations. Thus he has noted the specific gravity of the cerebrospinal fluid to be greater in progressive paralysis (from 1.0045 to 1.0047) than in other nervous diseases (from 1.0043 to 1.0045), with the exception of epilepsy. The concentration in progressive paralysis appears to increase with the progress of the disease, as one might expect on the hypothesis of progressive disintegration. Lower figures were obtained only in cases of remission.

1. Stanford, R. V.: Vergleichende Studien über Cerebrospinalflüssigkeit bei Geisteskrankheiten, I. Dichte, Ztschr. f. physiol. Chem., 1913, lxxxvi, 43.

Medical News

ARKANSAS

Fire Destroys Sanatorium.—The fire which swept Hot Springs, September 5, causing a destruction of more than $3,000,000 worth of property, burned the Ozark Sanatorium with a loss of $45,000, partially covered by insurance.

New Officers of State Board.—At the annual meeting of the State Medical Board of the Arkansas Medical Society, held in Little Rock, August 13, Dr. J. C. Wallis, Arkadelphia, was elected president; Dr. W. S. Stewart, Pine Bluff, secretary, and Dr. M. Fink, Helena, treasurer.

Plans Bureau of Vital Statistics.—The State Board of Health is planning to establish a Bureau of Vital Statistics as provided for by an act of the legislature. The Federal Government has detailed F. L. Watkins, special agent of the Census Bureau, to have charge of the work and to assist the state board.

Free Anti-Rabic Treatment.—The Arkansas State Board of Health announces that it is prepared to give free anti-rabic treatment to all persons bitten by dogs or other animals suspected of being rabid. To secure this treatment, it is necessary for the applicant to obtain an order on the board from the county judge for the treatment.

Personal.—Dr. E. F. Winegar, Hot Springs, accused of dividing fees for medical services, was acquitted by the jury, August 22. Dr. Winegar has reopened his sanatorium which was burned March 7.——Dr. J. E. Phillips, local surgeon for the Iron Mountain System at Fort Smith, who was operated on recently in St. Louis, has returned home, convalescent.

State Health Car for Arkansas.—At a recent meeting of the Arkansas County Medical Society, held at Stuttgart, Dr. T. B. Bradford, Cotton Plant, announced that he was working on a proposition to provide a health car to travel around the state, disseminating information regarding the prevention of disease, distributing literature and carrying with it a corps of lecturers for the education of the people.

CALIFORNIA

Seeks Site for Hospital.—Dr. John A. Reily of the State Hospital, Patton, is searching for a site for another hospital for Southern California. The institution is to cost about $90,000 and will occupy a site of about three hundred acres.

Hospital Notes.—The Universal City Hospital was formally dedicated August 8. Dr. Rollin French is in charge of the institution.——The City Council of Los Angeles has approved the plan of Drs. J. A. Jackson and F. L. Hough to establish a branch of the Emergency Hospital in Hollywood.——The Haben Hospital, Monrovia, recently erected by the Misses Haben, at a cost of $15,000, was opened August 8. The building is 50x90 feet and of bungalow design.——The new Pomona Valley Hospital, erected at a cost of $60,000, at Pomona, was formally opened the last week in August. The building is of concrete construction and practically fireproof and can accommodate twenty-five private patients.

COLORADO

Baby Clinic Abandoned.—Lack of patronage has caused Deputy Health Commissioner Hays and Dr. W. H. Sharpley, superintendent of the County Hospital, Denver, to abandon the plan to establish a baby clinic at that institution.

Personal.—Dr. Walter Morritt, superintendent of the Minnequa Hospital and head of the sociologic department of the Colorado Fuel and Iron Company, has resigned to accept the position as superintendent of the Beth-El Hospital, Colorado Springs.

FLORIDA

State Board Will Control Hydrophobia.—The State Board of Health of Florida has made arrangements to furnish the Pasteur treatment free to physicians of the state and also to make examinations of animals suspected of rabies.

Hospital Notes.—A site has been purchased in Pensacola on which it is understood that the Roman Catholics will erect a large hospital building.——The new St. Luke's Hospital, Jacksonville, is almost ready to receive patients and expects to open formally October 1.

Personal.—Dr. Hiram Byrd, Jacksonville, announces that he has severed his connection with the State Board of Health to be associated with the Grand View Sanatorium for Tuberculosis, Port Orange, Fla.——Dr. George W. Holmes, Sharpes, has returned after a trip to the Canal Zone and West Indies.

GEORGIA

New Officers.—Eighth District Medical Association at Elberton, August 20: president, Dr. W. J. Mathews, Elberton; secretary, Dr. Edward M. Coleman, Athens (reelected).

New Hospital.—The new hospital which the ladies of the Americus Hospital Association are to erect in that city, is to be located on the South Side of the city, and will be constructed of brick with granite trimmings, will contain thirty rooms, and will, it is expected, be ready to open before the end of the year.

ILLINOIS

Personal.—Drs. George N. Kreider and L. C. Taylor, Springfield, have returned from Europe.——Dr. and Mrs. W. Grant Hatch, Rockford, left for Europe, September 3.——Dr. J. Leslie, Elwin, celebrated his seventy-fifth birthday anniversary September 1.

Hospital for Fraternal Order.—The following staff of physicians has been appointed for Mooseheart, the industrial home of the Loyal Order of Moose: Drs. H. A. Brenneke and George A. Darmer. A building for the hospital is now under construction and work on the permanent building will be started this fall.

More State Hospitals Needed.—The State Charities Commission, in its annual report, urges the establishment in large centers of population of psychopathic hospitals for the care and treatment of the acute varieties of insanity, at which the commitment will be purely voluntary. It favors making the present state hospital into colonies for strictly chronic cases. It recommends that the first psychopathic hospital shall be established in Cook County. The commission urges that the study of psychiatry be made compulsory in all medical schools so that every person who enters the practice of medicine may have at least elementary knowledge regarding nervous and mental affections. A children's bureau, having broad power to deal with the dependent and delinquent classes, is also recommended by the commission.

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Chicago

New Hospital.—The Washington Boulevard Association is erecting a five-story building at Washington Boulevard and North Campbell Avenue to cost about $100,000. The building is to cover a ground area of 126x70 feet. Dr. Albert I. Bouffleur is chief surgeon of the association.

Personal.—Dr. Isaac C. Frisch, a member of the staff of the Chicago State Hospital, Dunning, has been transferred by the state to the Chester State Hospital, Menard, succeeding Dr. William H. Hercik.——Dr. and Mrs. T. J. O'Malley and Dr. Cornelius A. Leenheer have returned from abroad.

INDIANA

New Officers.—Thirteenth District Medical Society at Lake Wawasee, August 29: president, Dr. T. J. Shackelford; secretary-treasurer, Dr. C. Norman Howard (reelected), both of Warsaw.

Census of Centenarians.—Under the direction of the State Board of Health, a census and study of the centenarians of Indiana is to be made. Dr. J. N. Hurty, secretary of the State Board of Health, believes that such a study and investigation may be productive of value to the medical profession. Dr. Frank B. Wynn is associated with Dr. Hurty in the work and is preparing blank forms for use in making investigations and reports.

Tuberculosis Notes.—Dr. A. H. Caffee, Terre Haute, announces that the Twin Hills Tuberculosis Camp will close early in October on account of lack of funds. Next year it is hoped to keep the camp open through at least a part of the winter.——The Gibson County Society for the Study and Prevention of Tuberculosis has built a model tuberculosis-prevention sleeping house in the court house yard at Princeton.——A county sanatorium for tuberculosis is to be established at St. Joseph County at a point north of South Bend, and condemnation proceedings have been filed to obtain the thirty acres of land necessary for the project. The buildings will cost from $30,000 to $50,000, and will be grouped around a central administration building.

Personal.—Dr. George A. Sigler, Indianapolis, while crossing a street, was struck by an automobile, fracturing two ribs and one arm. He is said to be doing well at present.——Dr. Claude C. Crum, Jeffersonville, dislocated his right arm while cranking his automobile, August 30.——Drs. E. J. Lent, R. C. Shanklin, R. B. Dugdale, W. H. Baker and H. F. Mitchell, South Bend, and Dr. C. A. Dresch, Mishawaka, have started for Europe.——Dr. R. S. Rissler, Indianapolis, who has been in the government employ in Manila for more than four years, has returned to this country on leave of absence and will take a special course in sanitation at Harvard Medical School and in Vienna, before returning to his post of duty.——Dr. J. R. Mountain, Connersville, has returned from Europe.

Long State Hospital Almost Ready.—The Robert W. Long State Hospital, Indianapolis, connected with the Indiana University School of Medicine, is nearly completed and expects to be ready to receive patients about November 1. This building has been erected with funds amounting to $225,000, given by Dr. and Mrs. Robert W. Long, Indianapolis. The new hospital will be under the supervision of trustees of the university and directly under the care of the University School of Medicine. Dr. Edward L. Lingeman is to be medical resident in charge of the institution.——The additional units of the Indianapolis City Hospital are being rapidly completed and by the time they are ready to receive patients, on October 1, the hospitals will have a total capacity of about two-hundred and fifty.

IOWA

Personal.—Dr. Charles B. Burk, Atlantic, is reported to be seriously ill in Mercy Hospital, Council Bluffs.——Dr. Mark F. Boyd, health officer and city bacteriologist of Oskaloosa, has resigned to accept a fellowship in the department of preventive medicine and hygiene in Harvard University.——Dr. Merle F. Warner, Council Bluffs, is under treatment in the Jennie Edmundson Memorial Hospital for paralysis.

About Tuberculosis Camps.—The action of the Des Moines Associated Charities in abandoning Ridge Camp, an outdoor tuberculosis sanatorium in Highland Park, will result in the County Board of Supervisors erecting a building on the County Farm at a cost of $3,000 for the use of tuberculosis patients. The Ridge Camp was abandoned on account of the few patients remaining to be cared for, and for the time being, a temporary tent colony has been established at the County Farm.

Judges in Baby Contest.—The list of judges in the Baby Health Contest at the State Fair, Des Moines, include Dr. Lenna L. Meanes, Des Moines; Dr. Agnes Eichelberger, Sioux City; Dr. Velura E. Powell, Red Oak; Dr. Margaret V. Clark, Waterloo; Dr. Lucy M. B. Harbach, Des Moines; Dr. Jennie G. Ghrist, Ames; and Dr. Sophie H. Scott, Des Moines. Mrs. Mary Watt of Audubon, general superintendent of the contests, will be assisted by Dr. Florence B. Sherbon, Colfax, and Mrs. A. O. Ruste, Charles City.

KENTUCKY

New Officers.—Letcher County Medical Society reorganized at Whitesburg, August 29: president, Dr. Thomas A. Cook, Democrat; secretary-treasurer, Dr. Demsey F. Smith, Whitesburg.

Obstetrical Clinic Opened.—A free obstetrical clinic has been opened in the building of the Associated Charities, Louisville, every Wednesday afternoon, beginning September 3. The Babies' Milk Fund Association, the Visiting Nurses of the Kings' Daughters, the City Health Department, the University of Louisville and the Associated Charities, have united to operate the clinic of which Dr. Gavin Fulton is medical director.

State Association Meeting.—At the annual meeting of the Kentucky State Medical Association held in Bowling Green, September 2-4, the following officers were elected: president, elect Dr. James W. Ellis, Masonville; president, Dr. W. O. Roberts, Louisville; vice-presidents, Drs. James L. Neel, Drake; Marshall McDowell, Cynthiana, and James B. Kinnaird, Lancaster; secretary, Dr. Arthur T. McCormack, Bowling Green, reelected; treasurer, Dr. William B. McClure, Lexington (reelected); councilors, Dr. Dunning S. Wilson, Louisville, fifth district, and Dr. Joseph E. Wells, Cynthiana, eighth district; delegates to the American Medical Association, Drs. William W. Richmond, Clinton, and Archibald H. Barkley, Lexington; orator in medicine, Dr. William A. Poole, Henderson; and orator in surgery, Dr. A. D. Willmoth, Louisville. Newport was designated as the meeting place for 1914.

LOUISIANA

Free Treatment for Children.—The city health officer of Shreveport on August 23, issued a statement announcing that "all eye, ear, nose and throat specialists and dentists have agreed to treat all children free whose parents are unable to pay, and I am sure the general practitioners will do the same."

Personal.—Dr. W. W. Butterworth, New Orleans, has returned from Europe.——Dr. J. N. Thomas, superintendent of the Pineville State Hospital, who recently underwent operation at Touro Infirmary, New Orleans, is recuperating at Cooper's Wells, Miss.——Dr. J. A. White has been elected president of the reorganized Board of Health of Alexandria.——Dr. and Mrs. Rudolph Matas, New Orleans, are spending the summer abroad.——Dr. and Mrs. George F. Cocker have sailed for Europe.

MARYLAND

Sanatorium Completed.—The Allegany County Tuberculosis Sanatorium of Haystack Mountain near Cumberland, has been completed, and was thrown open to the public, September 4.

Personal.—Dr. C. L. Andrews, of Johns Hopkins University, has accepted the position of professor of anatomy in the University of Mississippi Medical College.——Dr. W. W. Wiley, Cumberland, is reported to be seriously ill at his home.

MICHIGAN

Campaign for Endowment Fund.—The trustees of the Detroit College of Medicine and Surgery, at the forty-fifth annual meeting, reported that more than $100,000 had already been secured in the campaign for the $1,000,000 for an endowment fund.

MINNESOTA

Charities Board Budget.—The Charities Board budget for Minneapolis for 1914 amounts to $357,140. Of this $205,000 is for the addition of 350 beds to the City Hospital; $50,000 for the Hopewell Hospital for Tuberculosis, and $34,318 for the acquisition of Lymanhurst, a home for children.

County Hospitals for Tuberculosis.—County hospitals for tuberculosis have already been completed in St. Louis and Ottertail counties.——The hospital for Ramsey county is under construction and the board of tax levy of Hennepin county has been asked to appropriate $50,000 for this purpose.——

Murray and Lyon counties will build a joint tuberculosis sanatorium at a cost of $12.000.——St. Louis County Tuberculosis Sanatorium, Nopeming, has passed the inspection of the State Tuberculosis Advisory Commission whereby it receives an appropriation of $25,000 from the state.

MISSISSIPPI

New Officers.—Seventh District Health Officers' Association at Brookhaven, August 28: president, Dr. C. E. Catchings, Woodville; secretary, Dr. D. W. Jones, Brookhaven.

Fire Losses.—The home of Dr. R. A. Switzer, McHenry, was destroyed by fire August 28.——The offices of Drs. William H. Hanson and J. G. Backstrom, Tutwiler, were destroyed by fire, recently, with a loss of about $3,000.

Biennial Report of Health Board.—Dr. W. S. Leathers, University, state health officer, in his biennial report, gives minute details regarding the hookworm campaign, showing that during the last two years more than one hundred thousand patients have been examined, and ninety thousand have been treated, free of charge. Of this number forty-five thousand were children, 60 per cent. of whom were found to be infected and were cured. During the biennium, 13,623 examinations were made in the State Board of Health laboratory.

Urge Medical Inspection.—At a meeting of the Committee of Public Policy and Legislation of the Mississippi State Medical Association, with the State Board of Health, to discuss health problems of vital importance, a resolution was passed recommending "that the cities of Jackson, Meridian, Natchez and Vicksburg establish medical inspection of the public schools in these cities at the earliest possible date and that this work be so organized as to demonstrate to the people of the state the need and economic advantages of school inspection."

MISSOURI

New Officers.—Wright County Medical Society organized at Mountain Grove, August 5: president, Dr. Robert M. Rogers, Mansfield; secretary-treasurer, Dr. Ernest J. Butzke, Mountain Grove.

Personal.—Dr. Milton J. Hopkins, St. Louis, sustained a fracture of three ribs and possible internal injuries in a collision between an automobile and a street car, September 1.——Dr. William H. Winningham, Trenton, who underwent operation in the Henrotin Memorial Hospital, Chicago, recently, is reported to be doing well.

Sanatorium Fund Completed.—The Missouri Baptist Sanatorium, St. Louis, has secured the subscription of $50,000 required for this endowment fund which enables it to take advantage of the $100,000 from the estate of the late Alanson T. Brown. A new building will be erected at a cost of $150,000 adjoining the present structure and this will double the capacity of the hospital.

Systematic Free Nursing for Poor Consumptives.—So that every individual consumptive in St. Louis may have nursing care as well as medical attention, the St. Louis Society for the Relief and Prevention of Tuberculosis inaugurated a plan of district nursing, September 1. Under the new plan, each of the nurses of the society will be assigned a certain district of the city in which she will work. More than one hundred physicians of the city have volunteered their services in this good work.

NEW JERSEY

Personal.—Dr. M. I. Marshak has succeeded Dr. Joseph Adler as city physician of Bayonne.——Dr. Thomas C. McNamara, Hoboken, who has been seriously ill as the result of accidental poisoning by bichlorid of mercury, is reported to have recovered.

Non-Restraint Policy Adopted.—The superintendent of the State Hospital of New Jersey has reported to the governor the adoption of the method of non-restraint for insane patients, which has been carried on so successfully at the Peoria State Hospital under the direction of Dr. George A. Zeller.

Medical Staff Appointments.—The Stumpf Memorial Hospital Association, Kearney, announced the appointments of medical staff as follows: Dr. A. A. Strasser, Arlington, medical director; Drs. W. E. Doremus, Arlington; James R. Bramley, Arlington; Howard Dukes, Henry Allers, Harrison; E. S. Goudy, Kearney; W. B. Reick, Arlington; Marcus F. Squier, Arlington; Alfred A. Mutter, Arlington; John W. Reid, Kearny, and Walter G. Mead, Arlington. It is expected that the hospital will be opened early in October.

NEW YORK

Personal.—Dr. and Mrs. Amos T. Baker, Riverdale, have sailed for Europe.——Dr. C. M. Campbell, White Plains, has returned from Europe.

Growth of the Work Against Tuberculosis.—The progress made in the campaign against tuberculosis in the state is evidenced by the fact, that $630,500 has been given by individuals for the construction of hospitals for the care and cure of those afflicted with tuberculosis. Mrs. Elizabeth Newton, Fredonia, left $150,000 for a tuberculosis hospital; Mrs. Samuel W. Bowne, New York City, has given $100,000 for the construction of the Samuel W. Bowne Memorial Hospital; Alexander Smith Cochran, Yonkers, $250,000, for the Spraine Ridge Sanatorium for Incipient Cases and a site for the Municipal Hospital for Advanced Cases, valued at $8,000; B. B. O'Dell, Jr., Newbury, $25,000 for a tuberculosis hospital for Orange County; H. N. Adam, Buffalo, a site valued at $19,000, for a municipal tuberculosis sanatorium; anonymous donors, $60,000 for a tuberculosis division of the Albany Hospital; Mr. and Mrs. Charles E. Rayelyea, a site valued at $10,000 for the Elmira State Hospital; Robert H. Treaman, Ithaca, $5,500 for a site and part of the cost of the construction of the Tompkins County Tuberculosis Hospital; General H. W. Carpentier, Albany, 275 acres of land as a site and $2,000 toward the cost of the Saratoga County Hospital, and the late S. R. Bradley, Nyack, $1,000 to be applied to the Rockland County Tuberculosis Hospital.——Oswego County Tuberculosis Hospital, Orwell, erected at a cost of nearly $20,000, has been formally accepted by the board of supervisors. The institution is practically completed and will accommodate about thirty patients and is to be in charge of Dr. A. R. Allen, Orwell.

New York City

Travelers by Sea.—Dr. and Mrs. L. Faugeres Bishop, Dr. and Mrs. A. L. Smith, and Dr. Charles L. Dana, have recently arrived from Europe.——Dr. and Mrs. A. B. Berk have sailed for Panama.——Dr. and Mrs. L. Kast have returned from Europe.

Examiners of Defective Children Certified.—President Churchill of the New York Board of Education has received the following list of those certified as eligible for appointment as examiners of mentally defective children: Drs. Jacob T. Krause, Joseph G. Wilson, Harold W. Wright, Frank P. Jenks, Isabelle T. Lenart, Mary Appleton, Alice Leeder and Elsie Fox.

No Quarter for Cocain Users.—Five cocain users taken in a raid recently were sentenced to imprisonment for periods of from three to six months. One of the prisoners claimed that he used cocain because of suffering from tuberculosis of the spine but this brought him no clemency from the judge. One individual was sentenced to six months in the penitentiary for selling cocain to newsboys.

Lower City Death Rate.—The death rate for the week ended August 30 was 12.37 per 1,000 population, as against a rate of 13.28 for the corresponding week of last year. There was an increase in the number of deaths from measles, diphtheria, croup and whooping cough, but a decrease in the number of fatal cases of typhoid fever, there being but seven deaths due to this disease as compared with 19 for the corresponding week of 1912.

Personal.—Dr. Calvert M. DeForrest has been appointed deputy health officer of the Port of New York. Dr. DeForrest has just returned from Libau, Russia, where he has been in the Public Health Service for the last five years.——Dr. Howard C. Taylor was shot at by a disappointed or demented patient, August 22, but was uninjured.——Dr. T. L. Jones has accepted the position of surgeon to a mining and railroad hospital in Peru and sailed for his new post of duty, August 16.

NORTH DAKOTA

Good Work of State Sanatorium.—The State Tuberculosis Sanatorium, Dunseith, has so many applicants for admission that it has been necessary to erect a new cottage. The administration building is now being used for ward purposes for women, and male patients are being cared for in a cottage. The institution at present accommodates about fifty patients and the average weekly cost is $10.50 per patient.

Hospital News.—St. Joseph's Hospital is to be built at Minot by the Sisters of St. Francis at an approximate cost of $80,000. The building will be three stories in height, 200 by 42 feet, and will accommodate one hundred patients.——The

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new building of the State Hospital, Jamestown, is to be four stories in height, including a basement. It will be used as a ward building and will eventually be able to accommodate more patients by the construction of temporary wings at each end of the building.

OHIO

State Association Meeting.—The sixty-eighth annual meeting of the Ohio State Medical Association was held in Cedar Point, September 2-4, and the following officers were elected: president, Dr. George A. Fackler, Cincinnati; president-elect, Dr. John H. J. Upham, Columbus; secretary-treasurer, Dr. C. D. Selby, Toledo (reelected); chairman of the legislative committee and member of the legislative council, Dr. B. R. McClellan, Xenia; councilors, Drs. Clyde E. Ford, Cleveland, and Wells Teachnor, Columbus; delegates to the American Medical Association, Drs. Charles Graefe, Sandusky; W. D. Porter, Cincinnati; Charles L. Minor, Springfield; B. R. McClellan, Xenia; W. William Means, Columbus, and E. O. Smith, Cincinnati. Columbus was selected as the next place of meeting.

PENNSYLVANIA

Danville Hospital Cornerstone Laid.—With the grand officers of the Free and Accepted Masons in charge, the cornerstone of the $200,000 George F. Geisinger Memorial Hospital was laid in Danville, September 1. The hospital, a building to cost $200,000 and an endowment of $600,000, are given by Mrs. A. A. Geisinger, widow of the man for whom the new institution is named.

Philadelphia

Death of Wife of Dr. Montgomery.—Mrs. E. E. Montgomery died at her home, September 7, after a prolonged illness.

The Curtin Alumni Scholarship.—An appeal for funds has been issued by the Philadelphia Alumni Society of the medical department of the University of Pennsylvania to endow the scholarship intended to honor the memory of the late Dr. Roland G. Curtin. Remittances may be made to the treasurer of the fund, Dr. L. H. Adler, Jr., 1610 Arch Street.

Typhoid Fever.—Forty-seven new cases of typhoid fever developed in the city during the week ended September 6, a decrease of twenty-seven from the number reported to the Bureau of Health during the previous week. This is the least number recorded for any week since the first of August. Most of the cases are in the downtown and river wards and, according to Chief Vogleson, swimming in the Delaware and Schuylkill rivers is a source of infection. Analyses of the city water at the entrance to the mains from the filter plant have continued to show pure water, free from pollution, but analyses of water at the spigots in the river wards show pollution.

GENERAL

Roentgenologists Meeting.—The fourteenth annual meeting of the American Roentgen-Ray Society will be held in Boston, October 1-4. Lantern slide demonstrations will be an important feature of the proceedings and the plate exhibits promise to exceed all previous exhibits in size and illumination facilities.

More Hospitals for Cuba.—We learn from *Consular Reports*, August 7, that the cabinet of Cuba has granted the demand of the Department of Sanitation for forty new hospitals for the island. They are to be paid for from the lottery fund. A bill granting an appropriation of $65,000 for establishing a hospital at Guantanamo has also recently been signed by the president of the republic.

Hospital Officials Meet.—At the annual meeting of the American Hospital Association in Boston, August 28, the following officers were elected: president, Dr. Thomas Howell, New York City; vice-presidents, Dr. H. E. Webster, Montreal; Miss Mary A. Baker, Jacksonville, Fla., and Miss Mary Rogers, St. Louis; secretary, Dr. H. A. Boyce, Kingston, Ont., and treasurer, Mr. Asa Baker, Chicago (reelected).

Bequests and Donations.—The following bequests and donations have recently been announced:

Presbyterian Hospital, New York City, $5,000 by the will of Mrs. Jane Elizabeth Grannis, for the endowment of a bed in memory of her mother; St. John's Guild, $1,000, and Daisy Fields Memorial Hospital, $1,000.

St. Vincent's Hospital, New York City, $1,000 by the will of Elizabeth Varet.

German Hospital and St. Francis Hospital, New York City, each $5,000 by the will of Joseph Keder.

Military Surgeons to Meet.—The twenty-second annual meeting of the Association of Military Surgeons of the United States will be held in Denver, September 16-19, under the presidency of Surgeon William C. Braisted, U. S. N. An unique feature of the program is that one session of the association is to be held in a natural amphitheater at Red Rocks, Morrison, and another on the Continental Divide at Corona. The headquarters will be at the Brown Palace Hotel.

Meeting of Electrotherapeutists.—At the twenty-third annual meeting of the American Electrotherapeutic Association, held in New York City, September 2-4, the following officers were elected: president, Dr. George E. Pfahler; vice-presidents, Drs. Albert C. Geyser, New York City, Frank B. Granger, Boston; John W. Torbett, Marlin, Tex.; William L. Clark, Philadelphia, and Fred C. Tice, Roanoke, Va.; treasurer, Dr. Emil Heuel, New York City (reelected); secretary, Dr. J. Willard Travell, New York City (reelected), and lecturer, Dr. Fred M. Law, New York City (reelected).

Harvey Society.—The lectures of the Harvey Society for the coming winter include among others, Prof. A. D. Waller, London; Prof. Adolph Schmidt, Halle, Germany; Dr. Charles V. Chapin, Providence, R. I.; Dr. Rufus Cole, Rockefeller Institute; Prof. G. H. Parker, Harvard; Dr. Victor C. Vaughan, Ann Arbor, Mich.; Prof. Sven G. Hedin, Upsala, Sweden, and Prof. J. J. R. Macleod, Western Reserve University, Cleveland. The course will be inaugurated on October 4 by a demonstrative lecture by Dr. Waller, entitled "A Short Account of the Origin and Scope of Electrocardiography."

Colored Medical Men Meet.—At the fifteenth annual meeting of the National Medical Association, whose membership is composed of colored physicians, dentists and pharmacists, held in Nashville, August 26-28, the following officers were elected: president, Dr. A. M. Brown, Birmingham; vice-presidents, J. M. G. Ramsey, Richmond, Va., and O. La Branch, New Orleans; secretary, Dr. W. G. Alexander, Orange, N. J., (reelected) and treasurer, Dr. J. R. Levy, Florence, S. C. Officers elected for the medical section were Dr. J. R. Levy, Florence, S. C., president, and Dr. A. M. Tennant, Richmond, Va., secretary, and for the surgical section, Dr. N. L. Edwards, Bluefield, W. Va., president, and Dr. N. E. Cashin, Decatur, Ala., secretary.

Radium Apparatus Stolen.—Dr. F. L. de Verteuil, Royer's Building, Vancouver, B. C., writes that there was stolen from his office a few days ago, a radium apparatus. It was a flat, varnished apparatus from the Paris Radium Institute, 2½x3 cm., containing the equivalent of 60 milligrams of radium bromid of 500,000 activity. The apparatus was a silver disk on the back of which was the number "500." Filling the disk was the varnish, with the dissolved radium. The apparatus had been previously damaged and as the result the varnished surface was covered with small flakes of asbestos sticking to the varnish. A corner of the silver disk had a small dent in it. The apparatus was wrapped in several sheets of metallic lead, this being covered with black paper and rubber cloth over this. Should any reader of THE JOURNAL be offered a radium apparatus of the above description, Dr. de Verteuil requests that he may be notified at the earliest moment.

American Mine Safety Association.—An interesting program has been prepared for the meeting of the American Mine Safety Association at Pittsburgh, September 22-24, which was mentioned in THE JOURNAL of August 30. The meeting promises to be very largely attended. Prizes have been offered for men who compete in showing their skill in doing rescue work and recovery work at mines. Among the prizes are an oxygen inhalator and a miner's electric cap lamp, and medals for the individual contestants. A first-aid contest, similar to those held elsewhere in mining regions, is to take place and the prizes for this include first-aid cabinets and a first-aid instruction outfit and medals from the American Red Cross and American Mine Safety Association. An experimental explosion exhibit is to be given by the Bureau of Mines at their mine at Bruceton on September 23, which will enable those interested to see just exactly what caused the explosion, how the explosion acts, and the speed, pressure and other important items will be automatically recorded in the instrument room. A number of rescue men fitted with artificial breathing apparatus will enter the mine immediately after the explosion so as to illustrate how they can do rescue work in a mine while smoking and full of gas, immediately after disaster. On the evening of September 23 a smoker is to be given in the Fort Pitt Hotel to the visiting mining men.

Civil Service Examination for Chief Bacteriologist (Male).—The United States Civil Service Commission announces an open competitive examination for chief bacteriologist, for men only. From the register of eligibles resulting from this

examination certification will be made to fill a vacancy in this position in the Bacteriological Laboratory of the Bureau of Chemistry, Department of Agriculture, Washington, D. C., at $3,500 a year, and vacancies as they may occur in positions requiring similar qualifications, unless it is found to be in the interest of the service to fill any vacancy by reinstatement, transfer or promotion. The duties of this position will be to direct all bacteriological and a portion of the fermentation work of the Bureau of Chemistry; to direct the work necessary in controlling the bacteriological purity of interstate shipments and importations of foods; to carry on all investigations of a bacteriological nature connected with the enforcement of the Food and Drugs Act, and to carry on other investigations connected with the agricultural chemical work carried on by the Bureau of Chemistry. Competitors will not be assembled for examination, but will be rated on general education and scientific training with 40 weights; practical experience and fitness with 30 weights, and publications along bacteriological and pathological lines with 30 weights. An educational training equivalent to that required for an M.D. or Ph.D. degree from a college or university of recognized standing, and at least seven years' practical experience in bacteriological and pathological work involving original investigations, since receiving such degree, are prerequisites for consideration for this position. Statements as to training, experience and fitness are accepted subject to verification. Applicants must have reached their thirtieth but not their fiftieth birthday on the date of the examination. Applicants for this examination must have been actually domiciled in the state or territory in which they reside for at least one year previous to the date of the examination. Recently the commission has obtained an appropriation whereby it is now able to have as examiners on various scientific, technical and professional subjects men who are recognized authorities in such subjects. In passing on the qualifications of candidates in this examination, the commission will have the assistance of an expert examiner who has been thus secured. This examination is open to all men who are citizens of the United States and who meet the requirements. Persons who meet the requirements and desire this examination should at once apply for Form 304 and special form to the United States Civil Service Commission, Washington, D. C.; the secretary of the Board of Examiners, Postoffice, Boston, Mass., Philadelphia, Pa., Atlanta, Ga., Cincinnati, Ohio, Chicago, Ill., St. Paul, Minn., Seattle, Wash., San Francisco, Cal.; Customhouse, New York, N. Y., New Orleans, La., Honolulu, Hawaii, Old Customhouse, St. Louis, Mo., or to the chairman of the Porto Rican Civil Service Commission, San Juan, P. R. No application will be accepted unless properly executed and filed with the commission at Washington with the material required, prior to the hour of closing business on October 6, 1913. In applying for this examination the title "United States Civil Service Examination for Chief Bacteriologist (Male)" should be used.

CANADA

Annual Report of Hospitals for the Insane, Ontario.—The total number of insane in the hospitals of Ontario is 5,726, of whom 2,769 are male and 2,957 female, an increase over the previous year of 86. The admissions for the past year numbered 1,247, an increase of 103. There were 460 deaths and 570 discharged. The deportations numbered 258, an increase of 32. Insanity in the province cost nearly $1,000,000 annually. Commencing with the cycle of five years, 1882 to 1886, the growth of insanity in Ontario has been as follows: 2,775, 3,201, 3,865, 4,604, 4,933, 5,517. Of the 1,247 admitted in one year, 890 inherited a predisposition.

Annual Meeting Ontario Medical Council.—At the recent annual meeting of the Ontario Medical Council Dr. M. O. Klotz, Ottawa, was elected president, and Dr. John L. Bray, 170 University Avenue, Toronto, was reelected registrar. The names of two practitioners were struck from the register, Sir James Grant, Ottawa, having attained to his forty-eighth year of membership of the council, was moved a hearty resolution of congratulations. A resolution was adopted instructing the registrar of the Ontario Medical Council to accept Dominion registration as full qualification for license in Ontario, subject only to the production of the necessary credentials and payment of the usual fee.

What Toronto Is Doing in Tuberculosis Nursing.—In the year 1911 the sanatorium accommodation for Toronto patients was 153; Island Preventorium, 25; dispensaries, three clinics a week with an average attendance of about six. In May, 1913, the sanatorium accommodation had reached 270; Island Preventorium, 50; Daughters of the Empire Preventorium, 10; Forest School, 100; dispensaries, six clinics a week with Department of Health nurses in charge with an average daily attendance of 15. Since this work was established in Toronto in 1911 in connection with the Department of Health, 2,272 cases have been recorded. Of these 97 had no medical supervision; 1,019 were at some time under the supervision of dispensaries and 1,156 were under the supervision of private physicians. In May, 1913, 281 physicians have reported 1,202 cases, with 102 duplicates. The classification is as follows: Advanced, 361; moderately advanced, 449; incipient, 283; not classified, 190; arrested, 21; reported for supervision, 893; no supervision necessary, 309; reported by physicians, 870; reported by dispensaries, 332. One hundred and thirty-five physicians who are known to have treated positive pulmonary cases have not yet reported one case; 868 cases have been reported first by nurses and others not qualified to make a diagnosis, and of these 131 have since been reported by physicians.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Aug. 30, 1913.

The Prevalence and Preventability of Venereal Diseases

A report on this subject by Dr. R. W. Johnstone, a medical inspector of the Local Government Board, has been issued as a parliamentary paper. The deaths specifically registered as due to syphilis show a gradual and steady decrease from 89 per million in 1875 to 46 in 1910. It is considered doubtful, however, whether these figures are a reliable indication of the prevalence of the disease. Opinions collected from numerous specialists and physicians agree that there is as large or a larger proportion of syphilis as there was twenty years ago, but that the grosser lesions are less frequent than formerly. Moreover, there is no indication of a fall in the death-rates from disease caused by syphilis, such as locomotor ataxia, general paralysis of the insane, and aneurysm. On the other hand, army statistics show a remarkable diminution in the number of recruits rejected on account of syphilis, which has fallen from 158 per ten thousand in 1870 to 19 in 1911. Much syphilis is spread by infected males in consequence of ignorance or carelessness. The desire for concealment causes them to resort to quacks and pharmacists. Means for hospital treatment are defective. As a general rule no beds are reserved for venereal cases and lay managers often adopt the attitude that hospital funds should not be used to rescue patients from the consequences of sin. The report emphasizes the great advantage which would accrue if the necessary accommodations were provided in special wards in our general hospitals and free tests, such as the Wassermann, Noguchi, gonococcus and spirochete, were available. The time for making venereal disease notifiable is not considered to be ripe. The stigma attached to it is so great and the desire for concealment so marked that notification would prevent patients seeking medical advice.

Sir Jonathan Hutchinson's Will

Sir Jonathan Hutchinson left an estate of the value of $460,000, the bulk of which is divided among his eight children. He wrote the following directions in his will: "I desire to be buried in the same grave with my late beloved wife, the inscription on the gravestone to be, in addition to the names and dates, 'A Man of Hope and Forward-Looking Mind.'" He left his three museums, his clinical museum in London and his educational museums at Haselmere and Selby, to trustees to dispose of in their absolute discretion, but he stated his desire that they shall do so in accordance with his wishes expressed to them during his life.

BERLIN LETTER

(From Our Regular Correspondent)

BERLIN, August 22, 1913.

Personal

Professor Bier and Professor Körte have been named as honorary members of the Royal College of Surgeons in London.

Professor Hering of Prague has accepted a position as dean of the newly organized institute for pathologic physiology in Cologne.

On August 26, Dr. W. A. Freund, formerly a well-known professor of gynecology at Strassburg, who has for the last ten years made his home in Berlin, celebrated his eightieth birthday.

Protection Against Cholera

In order to be forearmed so that Germany might not suffer through the bringing in of cholera from the Balkan countries, the German government has taken definite steps toward the prevention of such entrance. Thus the trains which come from the Balkan countries and Austria have been carefully searched for persons with signs of cholera. Since the great epidemic in Hamburg, through the teachings of Koch, cholera has been kept from Germany. We may hope that this time again she may be protected from such an epidemic. Two bacteriologists from Berlin, moreover, have been invited by the Servian government to the capital, in order to aid the physicians in making positive diagnosis.

Feeding of Schoolchildren

For the last five years needy children of the Berlin public schools have been fed through the use of a fund voted by the city magistrate. The importance of this step is shown by the facts, now published by a magistrate, that daily 1,300 children have had no breakfast and 7,000 have had no lunch at home. Each year a sum of from $25,000 to $50,000 has been voted for this purpose.

A Mesothorium Concert

The directors of the clinics and of the city hospitals have been endeavoring because of various publications concerning the favorable action of mesothorium on cancer, especially cancer of the uterus, to secure some of this preparation for clinical use. The state and various public officials and private committees as well have been endeavoring to raise money to buy a sufficient quantity of this preparation. In Munich at the initiative of Professor Döderlein, a concert was proposed, the proceeds of which should be used for this purpose. The prices paid by subscription for the tickets for this concert have been as much as $25. The various clubs and trade unions have promised their assistance so that there is hope that by means of the power of music, a sufficient quantity of mesothorium may be purchased.

Sanitary Conditions in the French and German Navies

In the last number of the *Deutsche militärärztliche Zeitschrift* an army surgeon presents comparative studies on the sanitary conditions in the French and German navies with especial reference to tuberculosis. He shows that the German marines are in better condition than the French as shown by the markedly lower annual morbidity and still lower mortality, and in the rarity of dismissal for unfitness for service on account of tuberculosis and suspected tuberculous disease. The physical inferiority of the French marines depends chiefly on the greater frequency of tuberculosis and is explained by the low standard of physical capacity required of recruits. This is chiefly due to the prevalence of tuberculous infection among the population along the French seacoast and also to the lack of adequate military reserves on account of the insufficient increase in the population.

Miscellany

Interstate Quarantine Regulations Regarding Water and Ice Supplied by Interstate Carriers.—The secretary of the treasury as authorized by Congress has amended the regulations in regard to the water and ice supplied by interstate carriers for the use of passengers in the following respects: The state or municipal health authority within whose jurisdiction water is obtained shall certify that it does not carry disease; in case of doubt the water must be treated so as to make it safe, and the treatment must be certified by the health officer. Ice for cooling water must also be certified to be safe, and if it is to be placed in the water it must first be washed carefully in water known to be safe and handled in such a way as to prevent it from becoming contaminated by the organisms of infectious or contagious diseases. To aid the common carriers in carrying out this regulation, instructions have been issued to the effect that samples of water and artificial ice from every source of supply shall be subjected to bacteriologic examination and certified as to purity at least once every six months by the proper state or municipal health authority where the water is obtained, or by such competent persons as will be approved by the health authorities, and the common carrier shall make application for the certificate. Each new crop of natural ice shall be examined and certified before use. Copies of the certificates are to go to the Public Health Service, to the common carrier and to the files of the issuing authority. Whenever there is an unusual prevalence of typhoid fever, dysentery, infantile diarrhea or other water-borne disease in any locality from which common carriers receive water and ice, an additional examination of the water and ice is to be made and a supplemental certificate issued by the proper authority. These regulations in regard to the safety of the drinking-water for the use of passengers on trains, vessels, etc., if carefully carried out, in connection with the abolition of the public drinking-cup, should do much to safeguard the public from dangerous diseases.

The Careless Liver and the Hygienist.—The average careless liver, although he may be perfectly willing to swallow some "magic" elixir, exhibits uneasiness tinged with suspicion when approached on the subject of prolonging his life by means of adjusting himself to his environment. He feels that the span of life is fixed, and he cherishes but little hope of "beating the game." In other words, that convenient individual, the "man on the street," is skeptical about materially prolonging his life without surrendering some of the indulgences which he thinks make life worth living. It is this attitude of mind which leads him frequently to characterize the health-reformer as a "kill-joy," who is "against everything." . . . But it is far from the minds of those directing this new force of human betterment to advocate a mere niggardly or parsimonious hoarding of existence, without regard to its quality, color or meaning. The real warfare is against needless misery, preventable disease, mental and physical inefficiency, and the pitiable handicaps that not only shorten life, but take out of it the color and the satisfaction that make it worth living. Using the term in no sinister Nietzschian sense, the superman should not only live long, but live well, deriving his joy in life from the normal hormones circulating in his tissues, and not from the fleshpots or narcotic indulgences of our friend, the careless liver. The prolongation of life is the end that justifies the means, and the immediate work in hand is to make life more livable.—Eugene L. Fisk, in *Pop. Sc. Monthly.*

Study of the Pathology of the Living.—When we consider the crushing disadvantages under which our forebears worked it is amazing to find how much they did, and with what accuracy they had solved many problems. The most conspicuous example of this extraordinary insight into abdominal diseases is, I think, afforded by the work of Brinton, whose books on "Diseases of the Stomach" and on "Ulcer of the Stomach" for wide observation, profound and cogent reasoning and beauty of language have never been challenged by those of any other writers. But with the new methods to which I have referred the study of the pathology of the living became possible. Symptoms recited at the moment could be ascribed to the lesion disclosed by the operation in the precise stage of its existence in which it was capable of arousing those symptoms. The history of abdominal surgery in the last ten years is the tale of the lessons that were learned.—Sir Berkeley Moynihan, Address in Surgery. Brit. Med. Assn., 1913.

Value of "Civic Health."—In our present enlightenment, men seeking homes and manufacturers casting about for the location of industries are more and more making healthfulness a prerequisite to their selection. A great industrial company, contemplating a change in location for their plant, sent a committee of intelligent workmen to inspect the town under consideration. The committee gave an adverse report because they were unable to ascertain anything which was definite in regard to the health of the place and because the statements of citizens were conflicting.—Birth and Death Bookkeeping, bulletin issued by Association of Life-Insurance Presidents.

Marriages

NARCISSE ALBERT LAURENDEAU, M.D., St. Boniface, Man., to Miss Eva Brule of Fremont, N. Dak., at Walhalla, N. Dak., August 20.

WILLIAM EARNSHAW STYAN, M.D., Quincy, Cal., to Miss Lottie Christine Gansner of San Francisco, August 16.

WARREN GARFIELD MURRAY, M.D., to Miss Marion Louise Macfarlane, both of Kankakee, Ill., August 31.

JOHN PICKENS CUNNINGHAM, M.D., to Miss Beulah Thompson, both of Elbridge, Tenn., August 25.

EGERTON T. WILSON, M.D., O'Neil, Neb., to Miss Harriett E. Hunt of Owosso, Mich., August 23.

EDWARD F. DUFFY, M.D., Yonkers, N. Y., to Miss Margaret Ward of New York City, August 12.

WILLIAM K. FARLEY, M.D., Fulton, Ill., to Miss Sarah Sturges, at Dixon, Ill., August 16.

WILL HAWES, M.D., Fairbury, Neb., to Miss Alice Neville of Hebron, Neb., recently.

EDWARD J. DEIBERT, M.D., to Miss Flora Bader, both of Helerton, Pa., August 5.

SOFIE HERZOG, M.D., and Mr. M. Huntington, both of Brazoria, Tex., August 23.

Deaths

Harris Otis Perley, Colonel, M. C., U. S. A., retired, died at Fort Preble, Portland, Me., August 9, from kidney disease, aged 60. He was a graduate of Detroit Medical College in 1876 and in the same year entered the Medical Corps of the Army. Among his most important duties during the 36 years of his army service, were the command of the Army and Navy General Hospital, Hot Springs; the command of the hospital ship *Relief* in the Philippines and during the Boxer War; his detail as medical officer on the academic board of the United States Military Academy, West Point, and as chief surgeon of the departments of Mindianao and Colorado; Colonel Perley was retired May 8, 1913, on account of disability, incident to the service and since his retirement had lived in Portland, Me. He was a fellow of the American Medical Association and until a short time before his death a member of the Association of Military Surgeons of the United States.

Joseph Benson Marvin, M.D. Hospital College of Medicine, Louisville, Ky., 1875; a fellow of the American Medical Association; president of the Kentucky State Medical Association in 1894; president of the faculty and professor of principles and practice of medicine and clinical medicine in the University of Kentucky, Louisville; president of the medical staff of Norton Infirmary, neurologist to the Louisville City Hospital and physician to the Baptist Orphan Home; one of the most prominent practitioners of Kentucky; was killed in a collision between the Bar Harbor Express and the White Mountain Express on the New York, New Haven and Hartford Railroad, near New Haven, Conn., September 2, aged 61. His wife and daughter were traveling with him and both were killed.

James Owen Callahan, M.D. Missouri Medical College, St. Louis, 1888; a fellow of the American Medical Association; a member of the Southwestern Tri-State, Western District and Indian Territory Medical associations; for fifteen years chairman of the Creek Medical Examining Board and the author of the first and only medical laws ever passed by the Creek National Council; died at his home in Muskogee, Okla., August 29, from heart disease, aged 53.

Paul Gervais Robinson, M.D. Medical College of South Carolina, Charleston, 1856; surgeon in the Confederate service during the Civil War and since the close of the war a practitioner of St. Louis; for many years professor of principles and practice of medicine in Washington University and dean of the faculty of the Missouri Medical College; died at his home in St. Louis, August 22, from heart disease, aged 79.

Benjamin F. Miller, M.D. Medical College of Ohio, Cincinnati, 1859; assistant surgeon and surgeon of the Second Ohio Volunteer Infantry and brigade surgeon on the staff of General Scribner during the Civil War; once assistant professor of anatomy in the Ohio Miami Medical College and a member of the staff of the Cincinnati City Hospital; died at his home in Hyde Park, Cincinnati, August 23, aged 83.

Ira N. Barnes, M.D. Jefferson Medical College, 1862; a fellow of the American Medical Association and once president of the Decatur Medical Society; surgeon of volunteers during the Civil War; a member of the Illinois Army and Navy Medical Association; once a member of the Board of Health of Decatur, Ill.; died at his home, August 16, from cerebral hemorrhage, aged 84.

Thomas Robinson, M.D. Georgetown University, Washington, D. C., 1876; immediately after the Civil War the owner and editor of the *Savannah Journal*; for more than forty years an employé of the Treasury Department at Washington, and at one time president of the Board of Examiners of the Eclectic Medical Association; died at his home in Washington, August 25, aged 77.

Emerson Pullen McGeorge, M.D. Hahnemann Medical College, Philadelphia, 1894; a member of the Medical Society of the State of New Jersey; formerly coroner of Gloucester County and for two terms coroner of Salem County; died at his home in Woodstown, August 12, from the effects of a gunshot wound of the head, self-inflicted, it is believed with suicidal intent, aged 46.

Jane E. Spaulding, M.D. New York Medical College and Hospital for Women, 1861; formerly of Larned, Kan.; said to have been the third woman granted a certificate to practice medicine in the United States; for twenty years superintendent of the Santa Barbara (Cal.) Hospital; died at her home in Santa Barbara, August 31, from arteriosclerosis, aged 81.

Francis Asbury Emmons, M.D. Rush Medical College, 1863; Illinois Army Board, 1863; for many years a member of the Board of Education of Chicago, and at one time physician of Cook County; major and surgeon of volunteers during the Civil War and chief surgeon of Camp Douglas; died at his home in Chicago, August 21, aged 74.

Alphonso H. Madry, M.D. University of Louisville, Ky., 1886; a fellow of the American Medical Association and president of the Southwest Missouri Medical Society; local surgeon at Aurora, Mo., for the Kansas City, Fort Scott and Memphis Railroad; died at his home in Aurora, August 24, from disease of the lungs, aged 53.

Melbourne F. Middleton, M.D. Homeopathic Medical College of Pennsylvania, Philadelphia, 1868; for twenty years a member of the Camden (N. J.) Board of Health and one of the founders of the West Jersey Homeopathic Hospital; died at his home in Camden, August 21, from cerebral hemorrhage, aged 71.

Thomas Langan White, M.D. Jefferson Medical College, 1875; president of the McKeesport and Duquesne Bridge Company, the White Electric Traction Company, the McKeesport Light Company and the Chamber of Commerce of McKeesport; died at his home in that city, August 24, from pleuropneumonia, aged 60.

Daniel Manly Breaker, M.D. Oglethorpe Medical College, Savannah, Ga., 1861; a practitioner and minister of the Christian Church for more than fifty years, and a chaplain in the Confederate service throughout the Civil War; died at his home in Kissimmee, Fla., August 15, from senile debility, aged 82.

George Emory Foster, M.D. College of Physicians and Surgeons, New York City, 1868; at one time a member of the common council of Springfield, Mass., and for 43 years a practitioner of that city; died in Mount Clemens, Mich., August 22, a day after an operation for appendicitis, aged 63.

William A. Jordan, M.D. College of Physicians and Surgeons, Baltimore, 1873; one of the founders of St. Francis Hospital, Wichita, Kan., and later a member of the staff of the Wichita Hospital; for five years a physician of Sedgwick County; died at his home, August 19, from heart disease, aged 67.

Henry Gera, M.D. Miami Medical College, Cincinnati, 1880; a member of the Indiana State Medical Association; for several years a trustee of the School Board of Washington, Ind.; for two sessions a state senator; died in a hospital in Evansville, August 22, after a surgical operation, aged 68.

Mary Jane Laird, M.D. Woman's Medical College of the New York Infirmary for Women and Children, New York City, 1885; a pioneer physician of the San Joaquin Valley, Cal., and for many years a practitioner of Fresno; died at her home near Sanger, Cal., August 15, aged 67.

Joel E. Morrill, M.D. Northwestern Medical College of St. Joseph, Mo., 1884; for 36 years a practitioner of Chapman, Neb., and district surgeon for the Union Pacific System; since 1910 a resident of Lincoln, Neb.; died at his home, August 15, from cerebral hemorrhage, aged 73.

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Robert Osborne Treadwell, M.D. Jefferson Medical College, 1846; is said to have been the oldest alumnus of Harvard University; for several years professor of languages in the University of Barcelona, Spain; died at his home in Portsmouth, N. H., August 23, aged 90.

Charles H. Zorger, M.D. Illinois Medical College, Chicago, 1897; a fellow of the American Medical Association; formerly a practitioner of Champaign and later a resident of Bloomington, Ill.; died at the home of his brother in Champaign, August 23, from nephritis, aged 46.

William Shuler, M.D. University of Pennsylvania, Philadelphia, 1867; a veteran of the Civil War; for 25 years a member of the Examining Board of Pensions and for two terms a member of the State Legislature; died at his home in Miamisburg, Ohio, August 11, aged 70.

William Wyatt Wiley, M.D. University of Maryland, Baltimore, 1871; local surgeon of the Baltimore and Ohio System at Cumberland, Md., for many years and formerly water commissioner of Cumberland; died at his home, August 26, from gangrene of the foot, aged 64.

Samuel Eldridge Ewing, Jr., M.D. Jefferson Medical College, 1902; at one time resident physician of the New Cape May Hotel; a member of the Medical Society of the State of New Jersey; died at his home in Tuckahoe, N. J., August 23, from acute gastritis, aged 35.

Homer Frank Parr, M.D. Medical College of Indiana, Indianapolis, 1903; a fellow of the American Medical Association; who went to New Mexico about eight years ago on account of ill health; died at his home in Carlsbad, August 18, from typhoid fever, aged 34.

Isaac Newton Boyd, M.D. College of Physicians and Surgeons, Baltimore, 1880; for seven years thereafter a teacher in the York Haven School and for twenty years a practitioner of Goldsboro, Pa.; died at his home, August 21, from heart disease, aged 60.

Abraham Iralson, M.D. Barnes Medical College, St. Louis, 1900; a fellow of the American Medical Association and a practitioner of Clifton Heights, St. Louis; died in the Deaconess Hospital in that city, August 2, from heart disease, aged 38.

David F. Penington, M.D. Maryland Medical College, Baltimore, 1885; for twenty years president of the Masonic Relief Association of Baltimore and a resident of that city until 1902; died at his home, August 16, from acute gastritis, aged 66.

Frederick Fenton, M.D. Trinity Medical College, Toronto, 1892; for many years a member of the gynecologic and obstetric faculty of the University of Toronto; died July 27, from peritonitis, following an operation for appendicitis, aged 42.

Everett E. Gordon, M.D. Homeopathic Medical College of Missouri, St. Louis, 1897; of Cairo, Ill.; was shot and killed by the son of a patient, at the entrance of the drive leading to St. Mary's Hospital, Cairo, September 1, aged 40.

John Reineking, M.D. Rush Medical College, 1887; Bellevue Hospital Medical College, 1888; a member of the Wisconsin State Medical Society; died at his home in Hortonsville, Wis., May 27, from carcinoma of the stomach.

Smith Rumble, M.D. Atlanta (Ga.) Medical College, 1887; a fellow of the American Medical Association and one of the leading practitioners of Pike County, Ga.; died at his home in Barnesville, August 20, aged 54.

William Henry McCarthy, M.D. College of Physicians and Surgeons, Baltimore, 1891; a member of the Massachusetts Medical Society; of Brockton; died in that city, about August 22, from appendicitis, aged 70.

James W. Bunn, M.D. Starling Medical College, Columbus, Ohio, 1873; a member of the Ohio State Medical Association and a veteran of the Civil War; died at his home in West Union, August 26, aged 71.

Thomas E. Stone, M.D. Tulane University, New Orleans, 1893; a member of the State Medical Association of Texas; died at his home in Jasper, August 18, from carcinoma of the throat, aged 53.

Samuel G. Bailey, M.D. Jefferson Medical College, 1844; for more than forty years a practitioner and banker of Chicago; died at his home in that city, June 20, aged 92.

John Alvin Leitch, M.D. Harvard Medical School, 1887; died at his home in Andover, Mass., August 26, from diabetes, nephritis and cerebral hemorrhage, aged 48.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

STANDARDIZING DISINFECTANTS

American Medicine Attacks the Hygienic Laboratory and the Council on Pharmacy and Chemistry

A report adopted by the Council on Pharmacy and Chemistry on "Standardization of Disinfectants," appeared in these columns April 26, 1913. The report was submitted by a committee appointed to consider the question of the recommendation of a method for standardizing disinfectants. The subject was gone into with thoroughness, the three leading methods—the Rideal-Walker, the *Lancet* and the Hygienic Laboratory methods—being carefully considered by the committee, which, as a result of its investigation, recommended to the Council the adoption of the Hygienic Laboratory method as described in the government publication, Hygienic Laboratory Bulletin 82.

After the publication of the Council's report, Mr. Walker, in a letter to *American Medicine*, defended his own method of standardization and protested against the report adopted by the Council. This was natural.

Of Mr. Walker's defense, we shall, at this time, have nothing to say. In the same issue of *American Medicine* which contains Mr. Walker's letter, however, that publication rushes to Mr. Walker's defense, editorially, and attacks, not merely the Council's report, but also the motives of the members of the Council on Pharmacy and Chemistry and, inferentially, of Dr. Anderson of the Hygienic Laboratory. That *American Medicine* should attack the Council is the most natural thing in the world; for the animus, one need look no further than its advertising pages. But its attack on the Hygienic Laboratory and its officers is different and aroused the indignation of the *Old Dominion Journal of Medicine and Surgery*, which, in its July issue, makes some comments that are worth quoting.

After stating that Mr. Walker, in his letter, makes no charges other than those which might naturally arise between disputants, the *Old Dominion Journal of Medicine and Surgery* goes on:

"In commenting on Mr. Walker's letter, however, the editor of *American Medicine* takes an entirely different position, and makes statements and insinuations, which, if true, should receive prompt attention, and which, if untrue, should be as promptly withdrawn. Briefly, the editorial charges that the criticisms of the Rideal-Walker method have been dictated by a desire to promote 'a certain other test,' supposedly the Hygienic Laboratory method, and more serious still to 'further the use of a well-known antiseptic.' 'The situation is not a pleasant one to contemplate,' he states, 'for it suggests all too plainly reasons sordid and unsavory. Right always prevails, however, and we feel confident that when the true facts come to light Mr. Walker will find that the unpleasant experiences to which he has been subjected are simply the work of a few, who, instead of representing the great body of scientists of America, represent no one but themselves and their own selfish purposes.'

"In considering this rather remarkable example of skating on the thin edge of libel, the facts should be kept carefully in mind. The scientific aspects of the question need no discussion at this time; the relative merit of the two methods is a matter capable of easy determination by a few months' practical application of both, and will doubtless settle itself promptly. In considering the alleged effort to discredit Mr. Walker and his method, and the discourtesies and difficulties he is said to have encountered, it should be remembered that since coming to America Mr. Walker has been in the employ of a manufacturer of disinfectants, and his status has been necessarily that of a hired advocate rather than that of a disinterested scientist. Whatever the conditions in England, we have come in America to accept the researches of scien-

tists connected with our universities and governmental agencies rather than those employed by private concerns. We shall doubtless continue to do so for some time to come.

"The charge that Mr. Walker's method has been discredited to boost the sale of a rival disinfectant is so serious as to warrant that some proof be promptly brought forward or else that the charge be withdrawn. Even here, however, we must take into account the fact that the publication in which the editorial appears carries a half-page advertisement of the very concern to which Mr. Walker sells his service.

"Those who know the officers of the Public Health Service, particularly Dr. Anderson, and who knew Dr. McClintic before he laid down his life to science, will pay but little heed to such charges until something more definite is forthcoming from some source whose disinterestedness can at least be presumed."

Summing up the whole matter, it resolves itself into this: *American Medicine* attacks, by inference, Dr. Anderson of the Hygienic Laboratory; further, it berates the Council on Pharmacy and Chemistry, a body which has had to expose the fraudulence of many, if not most, of the proprietary remedies from which *American Medicine* receives a large proportion of its advertising income; in addition, it exhibits a warmth of feeling in championing Mr. Walker and his method that may or may not be due to the fact that the concern which employs Mr. Walker and which manufactures and sells a disinfectant "standardized by the Rideal-Walker Test," is a purchaser of advertising space in *American Medicine*.

For a publication whose journalistic ethics rise no higher than the counting-house and whose editorial policy seems to be subservient to the advertising department; which exploits —for a consideration—such proprietary frauds as Bannerman's consumption cure, Anasarcin, Phenol Sodique, Sal Hepatica, Cactina Pillets, Phenalgine, et al.; which publishes what seem to be editorial endorsements of some of the humbugs it advertises—for such a publication to attack, even by inference, the methods of such men as constitute the Council on Pharmacy and Chemistry and the Hygienic Laboratory, is to go beyond the limits of mere journalistic impertinence and to approach the realm of refined blackguardism.

DISEASE SUPERSTITIONS

As They Appear to Harper's Weekly

The belief is common among primitive and unlettered people that there is a specific remedy that will cure every disease of the body, if it can only be found.

Ignorant and superstitious people are peculiarly and pathetically susceptible to the persuasion of quacks who profess to have found the healing herb for their particular disease, and will go on squandering money and health after being defrauded a dozen times, because in their simple and pitiful faith they think each time, "Now, maybe, this man has found the real herb that will end my suffering."

This credulity is a matter for patient teaching. The health of the people is a national asset beyond the measure of dollars, but even the economic loss from avoidable sickness and death runs into unbelievable figures. The people must be carefully taught—not casually told—that disease is not an accident, not a dispensation of Providence or the infliction of an evil spirit, but the result of environment and of the mode of living. They must learn that health does not return by magic or by magic compounds; but it must be restored by a personal battle against disease.

Generous physicians, newspapers and journals, and social workers who are giving their time and means to fight the powers to prey and to spread the gospel of health, realize that education is slow. Thousands are saved every year, but it will take a long, strong effort to reach all the people with the truth. If ever there was an unselfish effort, and one of supreme importance to the country, it is the battle for national vitality.

What about the national health department at Washington? —*Harper's Weekly.*

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

QUESTIONS OF ETHICS

To the Editor:—Please answer the following questions:

1. Is it justifiable for a consultant to withdraw from the other physicians and hold a private conversation with a member of the patient's family?

2. Is a consultant ever justified in entering on a controversy with the attendant in the presence of the patient?

3. When the consultant takes charge of a patient because of a difference of opinion that he holds from that of the attending physician, is it proper for him to ask the physician whether or not the latter has relinquished the care of the patient? If this question is asked should it be in the presence of a third party, a layman?

X. Y. Z., South Carolina.

ANSWER.—In answering these questions it must be remembered that our reply is a general one. In any particular case both sides to the dispute should be heard before judgment is announced.

1. "In every consultation, the benefit to be derived by the patient is of first importance. All physicians interested in the case should be frank and candid with the patient and his family. There never is occasion for insincerity, rivalry or envy and these should never be permitted between consultants" ("Principles of Medical Ethics," Sec. 2, Art. III, Chap. II). While it is best that all consultants avoid "private conversations" with members of the patient's family during the consultation, the relations of one of the physicians with some of the friends of the patient may make such a talk unavoidable. Should the physician have the least suspicion that he does not have the absolute confidence of the others interested in the case, he will do well casually to report his interview and state the nature of such discussion during the conference of the consultants.

2. "Should the attending physician and the consultant find it impossible to agree in their views of a case, another consultant should be called to the conference or the first consultant should withdraw. Since, however, the consultant was employed by the patient in order that his opinion might be obtained, he should be permitted to state the result of his study of the case to the patient, or his next friend, in the presence of the physician in charge" ("Principles of Medical Ethics," Sec. 7, Art. III, Chap II). This statement of opinion can and should be made without controversy.

3. "When a physician has attended a case as a consultant, he should not become the attendant during that illness except with the consent of the physician who was in charge at the time of the consultation" ("Principles of Medical Ethics," Sec. 8, Art. III, Chap. II). It is the office of the patient, or his next friend, to obtain the necessary consent of the physician who was in charge at the time of the consultation.

RECURRENCE OF GALL-STONE AFTER OPERATION

To the Editor: Are there any authentic cases of recurrence of gall-stones following a thorough operation for their removal? If so, kindly give references. E. C. R.

ANSWER.—The question of recurrence of gall-stones after their removal by surgical operations is one which operators have found difficult to decide, because it is impossible in the majority of cases to be absolutely certain that stones found in the second operation were not overlooked in the former one. It is probably quite common for stones to be missed in an operation, which subsequently give rise to trouble.

For instance: Kehr states that in nineteen out of 491 gall-stone operations, or 4 per cent. of the cases, he overlooked or left in one or more stones. Shott states that in 260 gall-stone operations stones were overlooked twenty-eight times, or 10 per cent. of the cases. These twenty-eight cases appeared to be examples of recurrence, but Shott on analysis (*Beitr. z. klin. Chir.*, xxxix) thinks that in probably all of them the stone or stones which were found at a subsequent operation or at the necropsy were present at the first operation and overlooked. Kehr, however, reports that at a secondary operation he found a stone in the center of which was a small piece of catgut which had been used for sewing the gall-tracts at the first operation. This would certainly exclude the possibility of this stone having been overlooked.

Gall-stones, as a rule, undoubtedly have their origin in the gall-bladder. If the gall-stones were removed and the gall-bladder restored to a reasonably normal condition, it is per-

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fectly conceivable that the conditions which gave rise to the stones in the first instance might readily produce stones a second time, should the conditions recur. As a matter of fact, the conditions leading to the formation of gall-stones seem to occur at a particular time, and experience shows that these conditions very seldom recur. Hence it is exceedingly rare for a recurrence in the sense of the actual formation of new stones *de novo*, after their removal by surgical operation.

AUTOGENOUS VACCINES IN PYORRHEA ALVEOLARIS

To the Editor:—Please give me an opinion as to the merits of autogenous vaccines in the treatment of pyorrhea alveolaris.

L. C. GREENBURG, Indianapolis.

ANSWER.—The treatment of pyorrhea alveolaris with vaccines has been taken up only recently, and as yet a sufficient number of cases has not been reported to justify any conclusion. Indeed, the bacteriology has not been sufficiently studied so that autogenous vaccines of any definite organism have been used in more than a few cases. In general, reports on this subject have included only from three to ten cases in all, with results usually favorable. The organisms most commonly used have been the various streptococci, staphylococci and the pneumococci. In view of these facts, no exact statement can be given at this time. The following references concern some of the better reports:

Eyre, J. W., and Payne, J. Lewis: Some Observations on the Bacteriology of Pyorrhea Alveolaris and the Treatment of the Disease by Bacterial Vaccines, *Proc. Roy. Soc. Med.*, Odont. Sec., Nov. 22, 1909.

Jones, D. W., Carmalt, and Humphreys, J. E.: A Note on the Treatment of Pyorrhea Alveolaris by Inoculation with a Bacterial Vaccine, *Lancet*, London, Dec. 28, 1907, p. 1815.

Williams, William R.: The Vaccine Treatment of Pyorrhea Alveolaris, *Am. Jour. Med. Sc.*, 1911, cxli. 649.

Medalia, L. S.: Chronic Alveolar Osteomyelitis (Pyorrhea Alveolaris), Its Cause and Treatment with Vaccine, *Dental Cosmos*, January and February, 1913.

THE "FOGGING SYSTEM" IN REFRACTION WORK

To the Editor:—Please explain the "fogging system" in examining the eyes. L. L. E., Iowa.

ANSWER.—The fogging system means the overcorrection of hyperopia in cases of persistent spasm of the ciliary muscle in which the end sought is a certain degree of functional activity rather than complete immobility. The method simulates the static or cycloplegic method as the ciliary muscle is partially placed at rest by having in front of the eye examined a plus sphere of sufficient strength to more than overcome any ciliary muscle power that the eye might otherwise use when looking at a distance of 20 feet. It is called the fogging method because distant vision is made obscure or foggy by the overcorrecting lens, which renders the eye to all intents and purposes myopic while the lens is being used. This point should be kept in mind in estimating the refractive error, and one should proceed as in any regular case of refraction for myopia. It is only occasionally of service in eyes that have some form of hyperopia or simple myopic astigmatism, but it is not of service in myopia or compound myopia. It might be used in the young subject who must be refracted without drops on account of some local or constitutional disease, but it is not to be relied on as is refraction under a cycloplegic with the added assistance of the skiascope. It is not advisable to use this method without knowledge of the ophthalmoscopic findings, as it often leads to gross errors or even to injury to the eyes.

PHYSICAL CONSTANTS OF OIL OF HORSE CHESTNUT—DETERMINATION OF EPINEPHRIN

To the Editor:—1. Please give the physical constants of oil of horse chestnut (*Aesculus hippocastanum* L.). 2. Also a method for the quantitative estimation of epinephrin chlorid.

MORRIS T. MYERS, Norman, Okla.

ANSWER.—1. Stillesen (*Proc. Am. Pharm. Assn.*, 1909, lvii, 201) has examined the fixed oil of horse chestnuts, which he obtained from the dried fruits in a yield of from 1.5 to 3 per cent. The oil contains traces of a mustard-like volatile oil which, however, could not be isolated. The specific gravity at 15 C. was 0.9260; refraction index at 20 C., 1.4747; saponification number, 194.5; iodin number, 95.4; Reichert-Meissl number, 1.54; Hehner number, 92.9; acetyl number, 13.5. The oil is mainly composed of olein, containing besides small quantities of linolein, palmitin and stearin. Sulphur was not present. It is intermediate between the half-drying and non-drying oils.

2. A biologic method for the valuation of epinephrin preparations has been elaborated by the Council on Pharmacy and Chemistry and appeared in THE JOURNAL, Sept. 30, 1911, p. 1149. Chemical (colorimetric) methods for the determination of epinephrin have recently been published by Otto Folin and his coworkers (*Jour. Biol. Chem.*, 1913, xiii, 477), and by Atherton Seidel (*Ibid.*, 1913, xv, 197).

USE OF DIPHTHERIA ANTITOXIN AS AN IMMUNIZING AGENT

To the Editor:—Please tell me whether or not diphtheria antitoxin has been discontinued as an immunizing agent, and if there is any literature to the effect that if given as an immunizing agent and the patient should subsequently develop diphtheria, it would be hazardous to administer antitoxin.

T. F. H., M.D., Anniston, Ala.

ANSWER.—A partial answer to this question was given in THE JOURNAL, Jan. 11, 1913, p. 147. Diphtheria antitoxin is quite generally used as an immunizing agent. Usually a dose of 500 units is given to all the children in a family in which a case of diphtheria has developed. In such instances no attention is paid to the possibility of anaphylaxis on later injection of diphtheria antitoxin. Indiscriminate immunization by the injection of serum is not advised by any of the writers on this subject. To avoid serious results from anaphylaxis in cases in which known immunizing doses have previously been given, it is customary to inject first a small dose of from 5 to 8 minims, and if no symptoms develop, to follow this within an hour with the full dose which it is desired to inject.

TREATMENT OF XEROSTOMA

To the Editor:—I have a patient whose mouth and pharynx are perfectly dry at all times. The mucosa of the lips, cheeks, soft and hard palate, fauces, pharynx and larynx is perfectly dry and glazed and there does not seem to be any secretion of mucus. This condition has existed for four years. What could cause such a condition? She has some heart-muscle weakness, but kidneys and rest of body are all right. There is a faint yellow tinge to the conjunctiva. Please let me know what you think could cause such a dry condition of the mucosa.

C. T. PANKHURST, M.D., North Star, Mich.

ANSWER.—Xerostoma or dryness of the mouth is attributed to an affection of the nerve supply of the glands of the mouth. It usually occurs in females and it may be due to febrile conditions, mouth breathing, diabetes, etc. The systemic condition should be carefully determined and appropriate remedies given. Small doses of potassium iodid and pilocarpin (0.003 gm. or 1/20 grain) allowed to dissolve in the mouth with a little water are useful. Galvanism is recommended in cases of centric origin.

THE CONSUMPTION OF SUGAR

To the Editor:—Will you kindly inform me whether 82 pounds per capita (as in "Sugar as Food," editorial, THE JOURNAL, Aug. 16, 1913, p. 492) is correct?

H. E. MERENESS, M.D., Albany, N. Y.

ANSWER.—According to Senate Document 890, Sixty-Second Congress, the annual per capita consumption of sugar in the United States is given as 79.2 pounds. Of this amount 53.7 pounds, or 268.5 pounds per family, is purchased by consumers for direct consumption as determined by the U. S. Bureau of Labor of 1901. The remaining 25.5 pounds is purchased by manufacturers for use in confectionery, condensed milk, biscuits, chewing-gum, and other manufactured products.

EFFECTS OF CALCIUM LACTATE

To the Editor:—Please tell me if there would be any untoward effects from the use of calcium lactate given in doses of from 45 to 60 grains a day continued over a very long period of time.

A. C. ENGLAND, M.D., Pittsfield, Mass.

ANSWER.—Probably not. It is somewhat doubtful whether calcium salts are absorbed to any large extent from the gastro-intestinal tract.

VIOLET RAYS AND STERILITY

To the Editor:—Can you inform me whether or not there is any truth in the statement that violet rays and high-frequency applications cause sterility, the same as Roentgen rays?

C. L. H. SCHWARTZ, New York, N. Y.

ANSWER.—We find no references to such an action in recent current medical literature, and the text-books on medical electricity give no evidence of such a fact.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, October 7-8. Sec., Dr. John Wix Thomas, Phoenix.

COLORADO: State Capitol, Denver, October 7. Sec., Dr. David A. Strickler, 612 Empire Building.

GEORGIA: Regular, State Capitol, Atlanta, October 14. Sec. Dr. C. T. Nolan, Marietta; Homeopathic, Atlanta, October 1. Sec., Dr. R. E. Hinman, 106½ Whitehall St.; Eclectic, State Capitol, Atlanta, October 14. Sec., Dr. C. W. Miller, 192 W. North Ave.

IDAHO: Boise, October 7. Sec., Dr. John F. Schmershall, Jerome.

ILLINOIS: Coliseum Annex, Chicago, September 24-26. Acting Sec., Almos Sawyer, Springfield.

KANSAS: National Hotel, Topeka, October 14. Sec., Dr. H. A. Dykes, Lebanon.

LOUISIANA: New Orleans, October 27-29. Sec., Dr. A. B. Brown, 34 Cusachs Building.

MICHIGAN: Capitol Bldg., Lansing, October 14-16. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: University of Minnesota, Minneapolis, October 7-10. Sec., Dr. Thomas S. McDavitt, 814 Lowry Building, St. Paul.

MISSISSIPPI: Jackson, October 28-29. Sec., Dr. E. H. Galloway, Jackson.

MONTANA: State Capitol, Helena, October 7. Sec., Dr. Wm. C. Riddell, Helena.

NEW JERSEY: State House, Trenton, October 21-22. Sec., Dr. H. G. Norton, 429 E. State Street.

NEW MEXICO: Santa Fe, October 13. Sec., Dr. W. E. Kaser, East Las Vegas.

NEW YORK: September 23-26. Chief of Examinations Division, Mr. Harlan H. Horner, Department of Education, Albany.

OKLAHOMA: Muskogee, October 14. Sec., Dr. John W. Duke, Guthrie.

RHODE ISLAND: State House, Providence, October 2-3. Sec., Dr. Gardner T. Swarts.

UTAH: Salt Lake City, October 6-7. Sec., Dr. G. F. Harding, 310 Templeton Building.

WYOMING: State House, Cheyenne, October 15. Sec., Dr. J. B. Tyrrell, Laramie.

New Jersey Reciprocity Report

Dr. H. G. Norton, secretary of the New Jersey State Board of Medical Examiners, reports that sixty-one candidates were licensed through reciprocity since Jan. 1, 1913. The following colleges were represented:

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
University of Colorado	(1907)	Utah
College of Physicians and Surgeons, Chicago	(1904) (1907)	Illinois
University of Iowa, College of Medicine	(1892)	New York
Baltimore Univ...	(1903) Pennsylvania (1898) (1900)	New York
Boston University	(1905)	Maine
New York Univ. Med. Coll. (1898) New York;	(1898)	Penna.
Eclectic Med. Coll., New York...	(1899) (1900) (1906)	New York
New York Homeo. Med. Coll. and Hosp.	(1911)	New York
Albany Medical College	(1903)	New York
Syracuse University	(1912)	New York
Cornell University	(1903) (1905) (1911)	New York
University and Bellevue Hospital Medical College, New York (1908) (1911) New York.		
Columbia University, College of Phys. and Surgs. (1898) (1904) 1907, 2) (1910, 2) (1911) (1912, 2) New York.		
Long Island College Hospital, New York (1900) (1908) (1909) New York; (1912) District of Columbia.		
University of Pennsylvania (1898) (1899, 2) (1911) (1912) Pennsylvania.		
Jefferson Medical College (1910) Maine; (1898) (1900) (1910) (1912) Pennsylvania.		
Hahnemann Medical College and Hospital, Philadelphia (1894) (1897) (1902) (1910) Pennsylvania.		
Women's Medical College of Pennsylvania (1901) New York; (1912) Pennsylvania.		
Medico-Chirurgical College of Philadelphia (1906, 2) (1909) (1912) Pennsylvania.		
University of Pittsburgh	(1909)	Penna.
University of Vermont	(1912)	Vermont
University of Naples, Italy	(1895, 2) (1896)	New York
University of Palermo, Italy	(1887)	New York

Kansas February Report

Dr. H. A. Dykes, secretary of the Kansas Board of Medical Registration and Examination, reports the written examination held at Topeka, Feb. 11-13, 1913. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 4, of whom 3 passed and 1 failed. Fifteen candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Howard University, Washington, D. C.	(1912)	82.
University of Kansas	(1912)	81
Kansas City Medical College	(1903)	76.

FAILED

College	Year Grad.	Per Cent.
Meharry Medical College	(1911)	66

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Northwestern University Medical School	(1905)	Iowa
Hering Medical College	(1902)	Colorado
Eclectic Medical College of Indiana	(1904)	Texas
Medical College of Indiana	(1894)	Indiana
Iowa College of Physicians and Surgeons, Des Moines	(1896)	Iowa
University of Louisville	(1912)	Kentucky
St. Louis University	(1909)	Missouri
Washington University, St. Louis	(1910)	Missouri
University Medical College, Kansas City	(1898)	Missouri
Eclectic Medical College, Cincinnati	(1911)	Missouri
University of Tennessee	(1906) (1912)	Tennessee
College of Physicians and Surgeons, Memphis	(1911)	Tennessee
Tennessee Medical College	(1894)	Tennessee
Meharry Medical College	(1912)	Tennessee

Massachusetts May Report

Dr. W. P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, reports the written and practical examination held at Boston, May 13-15. The number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 41, including 12 non-graduates and 5 osteopaths, of whom 21 passed, including 4 non-graduates and 1 osteopath, and 20 failed, including 9 non-graduates and 4 osteopaths. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Bennett Medical College	(1913)	86
Chicago College of Medicine and Surgery	(1912)	75
Medical School of Maine	(1899)	81
Baltimore Medical College	(1912)	79.9
Tufts College Medical School.. (1911) 79.7, 80.2;	(1912)	75
College of Physicians and Surgeons, Boston	(1910)	75
Boston University	(1897)	80
Harvard Medical School, (1887) 80; (1910) 77.8;	(1911)	81.6
Dartmouth Medical School	(1906)	75
Albany Medical College	(1911)	75
University of Pennsylvania	(1899)	79
University of Vermont	(1912)	76.1
Non-Graduates, 75, 75, 76, 76.5.		

FAILED

College	Year Grad.	Per Cent.
Atlanta School of Medicine	(1912)	65.6
Chicago College of Medicine and Surgery	(1912)	68.5
Maryland Medical College	(1912)	55.3
Harvard Medical School	(1913)	69.2
University of Vermont	(1891) 65; (1912)	70.5
Royal University of Palermo, Italy	(1908)*	
Non-graduates, 47, 55, 63.6, 65.5, 68, 68.7, 70.5, 71, 71, 71.4.		

* Examination not completed.

Mississippi June Report

Dr. E. H. Galloway, secretary of the Mississippi State Board of Health, reports the written examination held at Jackson, June 3-4, 1913. The number of subjects examined in was 8; total number of questions asked, 64; percentage required to pass, 73. The total number of candidates examined was 54, of whom 41 passed, 12 failed and one withdrew. One candidate was licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Alabama...	(1885) 75, (1909) 86, (1912)	78.7
Atlanta School of Medicine	(1913) 76.5, 77, 77, 84.1, 92.3.	
Atlanta College of Physicians and Surgeons	(1913)	75
Chicago College of Medicine and Surg.	(1912) 78; (1913)	84
University of Louisville	(1913)	79
Tulane University of Louisiana, (1912) 88; (1913) 81, 81, 82, 84, 91.		
St. Louis College of Physicians and Surgeons	(1912)*	80
Vanderbilt University, Nashville (1911) 88; (1913) 75.5, 81, 83, 84.1, 92.3.		
Memphis Hospital Medical College (1912) 79; (1913) 75, 75.7, 76, 78, 78.5, 79, 79, 79, 79, 80, 80.1, 82, 87.		
University of Tennessee (1913) 83, 83, 84.		
University of Virginia	(1913)	80

FAILED

College	Year Grad.	Per Cent.
Birmingham Medical College	(1908)	65
Reliance Medical College	(1911)	65

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Memphis Hospital Medical College (1910) 65.5; (1911) 63.3; (1912) 47; (1913) 63, 66, 69.
University of Tennessee ..... (1912) 67, 71
Meharry Medical College..... (1907) 60; (1911) 61

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Memphis Hospital Medical College.....	(1911)	Tennessee

* College reports no record of graduation.

Wyoming June Report

Dr. J. B. Tyrrell, secretary of the Wyoming State Board of Medical Examiners, reports the written examination held at Cheyenne, June 25-27, 1913. The number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 5, of whom 4 passed and 1 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
College of Physicians and Surgeons, Chicago....	(1912)	90.
Chicago College of Medicine and Surgery.....	(1913)	87.7
Baltimore Medical College.....	(1912)	90.7
University of the South.....	(1908)	91.4

FAILED

Ensworth Medical College.....	(1908)	70.

Montana July Report

Dr. William C. Riddell, secretary of the State Board of Examiners of Montana, reports the written examination, held at Helena, July 8-10, 1913. The number of subjects examined in was 10; total number of questions asked 50; percentage required to pass 75. The total number of candidates examined was 20, of whom 14 passed and 6 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Colorado	(1904)	80.9
Rush Medical College.....	(1902) 77.9; (1910)	75.3
Northwestern University Medical School (1896) 77.4; (1910) 86.		
Chicago College of Medicine and Surgery.....	(1913)	79.8
College of Physicians and Surgeons, Chicago....	(1913)	84
College of Physicians and Surgeons, Keokuk	(1898)	82
Harvard Medical School.....	(1913)	79.9
University of Michigan, College of Homeo. Med.	(1898)	80.6
University Medical College, Kansas City.....	(1913)	79.3
Creighton Medical College.....	(1909) 75.3; (1913)	78.9
Jefferson Medical College.....	(1910)	80.5

FAILED

Bennett Medical College.....	(1911)	73.4
College of Physicians and Surgeons, Chicago	(1910)	70.3
Physio-Medical College of Indiana..	(1888)	29
St. Louis University	(1913)	73.9
Wisconsin College of Physicians and Surgeons ..	(1905)	57.8
Marquette University, Milwaukee.....	(1911)	70.3

Rhode Island July Report

Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the written examination held at Providence, July 10-11, 1913. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 80. The total number of candidates examined was 10, of whom 7 passed and 3 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Howard University, D. C.....	(1913)	80
Tufts College Medical School (1911) 87.5; (1912) 80; (1913)		88.3
Harvard Medical School, Boston.....	(1913)	82.2
Columbia University, College of Physicians and Surgeons, New York	(1912)	81
University of Pennsylvania.....	(1913)	90.5

FAILED

Tufts College Medical School.....	(1913)	78
New York Homeopathic Medical College.....	(1910)	77.5
Laval University, Canada	(1912)	65.2

North Dakota July Report

Dr. G. M. Williamson, secretary of the North Dakota State Board of Medical Examiners, reports the written, oral and practical examination held at Grand Forks, July 1-4, 1913. The number of subjects examined in was 13; total number of questions asked, 116; percentage required to pass, 75. The total number of candidates examined was 15 of whom 7 passed and 8 failed. Five candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Chicago Homeopathic Medical College.....	(1895)	75.1
Rush Medical College.....	(1912)	78.7
College of Physicians and Surgeons, Chicago.....	(1911) 75.;	77.4
Northwestern University Medical School.....	(1913)	87.3
Minneapolis College of Physicians and Surgeons..	(1892)	75.
University of Manitoba.....	(1909)	81.6

FAILED

Chicago College of Medicine and Surgery.....	(1910)	67.6
Northwestern University Medical School.....	(1911)	69.1
College of Physicians and Surgeons, Chicago.....	(1900)	58.
Medical College of Indiana.....	(1902)	62.7
Keokuk Medical College, College of Physicians and Surgeons	(1903)	70.4
Marquette University.....	(1910) 69.8; (1912)	66.1
Queen's University, Kingston, Ontario.....	(1911)	67.9

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Rush Medical College.....	(1906)	Illinois
Northwestern University Medical School.....	(1906)	Illinois
College of Physicians and Surgeons, Chicago...	(1910)	S. Dakota
University of Minnesota, Homeopathic College..	(1904)	Minnesota
Trinity Medical College.....	(1903)	S. Dakota

Washington July Report

Dr. F. P. Witter, secretary of the Washington State Board of Medical Examiners, reports the oral, written and practical examination held at Tacoma, July 8, 1913. The number of subjects examined in was 11; total number of questions asked, 132; percentage required to pass, 75, and not less than 60 in any subject. The total number of candidates examined was 54, including 2 osteopaths, of whom 38 passed, including 1 osteopath, and 16 failed, including 1 osteopath. The following colleges were represented:

PASSED

College	Year Grad.	Total No. Examined
Georgetown University, D. C.....	(1912)	1
University of Illinois.....	(1913) (1912,2)	2
Bennett Medical College.....	(1911)	1
Rush Medical College.....	(1913)	1
Chicago College of Medicine and Surgery.....	(1910)	1
Northwestern University Medical School (1909)	(1913)	2
University of Iowa	(1908)	1
University of Louisville	(1907)	1
Johns Hopkins University	(1913)	1
Baltimore Medical College	(1909)	1
Tufts College Medical School.....	(1909)	1
University of Michigan, Dept. of Med. & Surg...	(1913)	1
University of Minnesota ..... (1907)	(1912)	2
Hamline University	(1905)	1
University and Bellevue Hospital Med. College..	(1912)	1
University of Buffalo	(1909)	1
Columbia Univ., College of Phys. & Surgs. (1896)	(1907)	2
University of Oregon ..(1905) (1911)	(1912) (1913,3)	6
Jefferson Med. College (1908) (1911)	(1912,3) (1913,2)	7
University of Virginia	(1888)	1
University of Toronto	(1902)	1

FAILED

Rush Medical College	(1882)	1
University of Indiana.....	(1907)	1
University of Iowa	(1908)	1
College of Phys. & Surgs., Kansas City, Kan....	(1898)	1
Kentucky School of Medicine.....	(1906)	1
College of Phys. & Surgs., Baltimore.....	(1905)	1
University of Michigan, Dept. of Med. & Surg...	(1890)	1
University Medical College, Kansas City.....	(1900)	1
Barnes Medical College	(1907)	1
Syracuse University	(1900)	1
Eclectic Medical College, Cincinnati.....	(1911)	1
Willamette University	(1913)	1
University of Pittsburgh	(1911)	1
University of Nashville	(1902)	1
Siena University, Italy	(1909)	1

Patent Medicine Domination.—The way out of the "patent-medicine" domination lies in the better training of physicians on the one hand and the enlightenment of public opinion on the other. No more effective agency exists for the forming of public opinion than an aggressive administration of the bureau at Washington which deals with pure food and pure drugs. No single agency in this direction has counted for so much as the personal work of one man, who has spent his life in fighting frauds and poisons. But we must have a hundred Wileys in the public service where now we have not one.—David Starr Jordan, *Science*.

Book Notices

THE AMERICAN ENCYCLOPEDIA AND DICTIONARY OF OPHTHALMOLOGY. Edited by Casey A. Wood, M.D., C.M., D.C.L. Volume I: A to Azoviolett. Cloth. Price, $6. Pp. 727, with illustrations. Chicago: Cleveland Press, 1913.

Of making books there is no end; but, till this ambitious volume, there had never been even a beginning of any attempt at a comprehensive, truly exhaustive exposition of ophthalmology in English. Text-books indeed have appeared in English from time to time, some of much, and more of little, worth. Quiz-compends have been known to exist. Numerous periodicals have been published—annals, journals, archives, records, etc.—and these, in general, have held their own with similar publications in German, Italian and French. Then, finally, appeared the Norris and Oliver "System of Diseases of the Eye," in four quarto volumes, extremely useful even now. But even that systematic treatise exhibited lacunae. It told us, for example, much of ophthalmology, but nothing at all of ophthalmologists. It showed, in a highly commendable manner, the ophthalmic practice of the day in which it appeared, but nothing whatever of the earlier stages of this slowly developing art—it exhibited, in other words, all the modern flower and fruitage, but absolutely nothing of the rough medieval trunk, or of the strong ancient roots, which, for sustenance, dipped far down into a humus of philosophy and religion. Then, too, in matters of refraction and accommodation, in ocular innervation and motility, as well as in a thousand lesser matters, like the accommodometer, the angulometer, the Aleppo button, and ophthalmologic chemistry and botany, the "System" of Norris and Oliver was most decidedly defective.

The French have done better. They have their "Encyclopédie française d'ophthalmologie"—nine goodly volumes that cover the major portion of the subject of ophthalmology, though omitting a number of extremely important matters.

The Germans have done better still. They produced, as a kind of beginning, the first edition of the Graefe-Saemisch "Handbuch der gesammten Augenheilkunde"—not so much a handbook, by the way, as a heavy, double armload of very extensive treatises. Then, patiently, and after the fashion of the great Teutonic investigators and writers—a fashion which will sooner or later be followed in this land of too many short-cuts—the Graefe-Saemisch editors and contributors set to work on a monumental "Zweite Auflage"—an enormous production which is still in the course of publication. Unfortunately, however, so extensive and so unrelated are the numerous parts of the "Zweite Auflage" that the reader has great difficulty in finding anything in it, and will continue to have until the work is complete and furnished with an index.

There was also a German Encyclopedia of Ophthalmology—excellent, too, but ill-starred. It went to about the letter M, since which nothing has appeared.

This is the first volume of an American attempt of similar character—an attempt which, we believe, is also the first of its kind in the English language.

The work is planned to appear in ten octavo volumes, each of seven or eight, or possibly nine, hundred pages, and then, at the close, an appendical volume, in which will be comprised, chiefly, such discoveries of importance in the field of ophthalmology as happen to have been made too late to be included in any of the earlier volumes.

The volume now before us—a well-bound, well-printed, beautifully illustrated production—is devoted entirely to subjects that begin with the letter A, and the comprehensive character of the work as a whole is well shown by the opening article of this the opening volume—"A": "Just as in modern times one often uses the initial letter of the name of a patient whose identity one desires to conceal, so the ancients occasionally employed the same device." The article thus begins and then goes on to relate the anamnesis and case report of an ophthalmic patient dead more than twenty hundred years. But the case is illustrative of ancient ophthalmic temple-practice, and so it is admitted to the book. The final article in the volume is entitled "Azoviolett," the name of a certain tint used now and then in spectacle lenses.

Between these two articles lie hundreds of others, varying, of course, in value, but, for the most part, scholarly, and so clearly, often so picturesquely, written as to be of the utmost interest alike to specialists and general practitioners. Among the contributors to the volume are Jackson, Allport, Frank, Würdemann, Ball, Beard, Rochester, Zentmayer, Gradle, Shastid, Posey, McKee and, indeed, nearly all the other men who have made American ophthalmology what it is. None but American (including, of course, Canadian) ophthalmologists contribute to the volume or to the series.

Aside from his work as one of the contributors, Dr. Wood is to be cordially congratulated—still more, the world of ophthalmology—on the masterly editing exhibited throughout the volume. The fine coordination of article with article, in works of an encyclopedic character, is never the result of happy accident.

Whether or not the standard erected by Volume I of this Encyclopedia is to be attained by succeeding volumes, the initial effort of the series will indubitably stand as a credit to American scholarship and American literary style. There should be more works of a similar character devoted to other specialties.

A REFERENCE HANDBOOK OF THE MEDICAL SCIENCES. Embracing the Entire Range of Scientific and Practical Medicine and Allied Sciences. By Various Writers. Third Edition. Edited by Thomas Lathrop Stedman, A.M., M.D. Complete in 8 Volumes. Cloth. Price, $56 set. Volume I—Aachen to Bacterinria. Pp. 928, with 611 illustrations. New York: William Wood & Co., 1913.

This work, which has been favorably received by two generations of medical men and is now before us in its third edition, is essentially a new one. The first two editions were edited by Dr. Albert H. Buck, but the third appears under the supervision of Dr. T. L. Stedman. It is not necessary to compare the previous editions with the present one, as it is evident that such a comparison could only illustrate the well-known fact of the tremendous advance of medicine in the past decade. Not only have the articles dealing with subjects treated in the second edition been thoroughly revised, but more or less extended treatises on new subjects have been added. Some characteristics of the work shown by a perusal of the first volume are worthy of notice. The first feature is the variety of the material and the number of authors who have been secured to present it. The list of contributors includes over a hundred names of specialists, most of whom are well-known American authors. The variety of subjects is still more striking; the larger topics are presented under convenient alphabetical subdivisions so that the anatomy of the abdomen forms a special topic in its alphabetic order. In addition a system of cross-references enables one to find the description of minor topics. Under these cross-references are included in many cases a sufficient account so that the larger title need not be referred to. The scope of the work includes medical history and biography, so that one may seek information here that he will fail to find in other systematic works. The extension of the work in the direction of the fundamental sciences, such as chemistry, biology, anthropology, etc., affords a welcome fund of information to one who has not the most extensive general encyclopedias at hand. Especially the information in reference to climatology and the conditions at various resorts and health stations would be difficult to duplicate. The thorough treatment of the individual topics can be appreciated only by careful reading. The subject of bacteria and bacteriologic technic is given over a hundred pages of this large volume, easily equivalent to three hundred of the ordinary text.

Another feature that adds materially to the value of the work is the excellent illustrations. Many are in colors, and especially those of skin diseases and of pathologic changes depict very strikingly and faithfully the objects described.

A review of the subjects included in the first volume is impossible in the space at command. The first important topic is the surgical anatomy of the abdomen, and this is supplemented by the surgical anatomy of the abdominal

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organs and a consideration of the diagnosis of abdominal tumors. These articles furnish a thorough account of a very important subject. We note that the illustration of the position of the organs pictures the stomach as lying transversely across the abdomen, following the anatomic text-books of a past decade. Another unimportant but very noticeable adherence to an older view is the statement that the colon is to be inflated by passing a tube into the descending colon, an unnecessary and probably impossible performance. On the whole, the treatment of these subjects seems very satisfactory. We shall await the appearance of the subsequent volumes of the series with great interest. If, as is to be assumed, they bear out the promise given by the initial volume, we can predict that these volumes will be as indispensable to the next generation of medical men as their predecessors have been to the present.

TEXT-BOOK OF GENERAL PATHOLOGY. By Various Authors. Edited by M. S. Pembrey and J. Ritchie. Cloth. Price, $5 net. Pp. 773, with 40 illustrations. New York: Longmans, Green & Co., 1913.

The subject of this work is not morbid anatomy but morbid physiology, whose "province is to correlate the processes in the diseased with those in the healthy; to determine the causes of failure in the interdependence of the different parts of the body; to show how the failure of one tissue reacts on all other tissues, and by following the progress of disease to explain how it causes death."

The book is the work of a number of specialists, including physiologists, pathologists and clinicians. The editors expressly state that no attempt has been made to reconcile divergencies of opinion which may appear in the different sections. The work is intended for advanced students and general practitioners. It is devoted to the consideration of a class of topics which must appeal to both classes from their intrinsic interest as well as their practical importance.

GENERAL SURGERY. Edited by John B. Murphy, A.M., M.D., L.L.D. (Practical Medicine Series, Vol. II.) Cloth. Price, $2. Pp. 632, with 252 illustrations. Chicago: The Year Book Publishers, 1913.

The subjects taken up particularly in this volume are anesthesia, operative technic, wound-healing and pathologic interventions, malignant tumors, surgery of bones, joints, tendons, blood-vessels, skull and brain, face and mouth, thyroid, thymus, thorax, abdomen, appendicitis and fractures. The book is well illustrated, and of special value to the reader, aside from the good selection of the material, are the comments of the editor. His wide experience and unusual acuity of clinical observation naturally have led him to formulate opinions which cannot fail to be of value to every practitioner. The book contains a great deal of practical, useful material such as the general surgeon needs to refer to daily.

BLOOD-PRESSURE IN GENERAL PRACTICE. By Percival Nicholson, M.D. Cloth. Price, $1.50. Pp. 157, with 7 illustrations. Philadelphia: J. B. Lippincott Company, 1913.

This is a handy little manual giving the principles of the taking of the blood-pressure, describing the instruments, of which the author naturally favors his own and points out the disadvantages of the aneroid instruments, and indicating the significance of the findings as showing pathologic conditions. The superiority of the auscultatory method of determining the reading of the diastolic pressure is emphasized. A brief account of the treatment of high and low blood-pressure is added. The book ought to be very useful to those who wish to inform themselves on the subject, a knowledge of which has become indispensable to the practicing physician.

MÜLLER'S SERODIAGNOSTIC METHODS. Authorized Translation from the Third German Edition. By Ross C. Whitman, B.A., M.D., Professor of Pathology, University of Colorado School of Medicine. Cloth. Price, $1.50 net. Pp. 146, with 7 illustrations. Philadelphia: J. B. Lippincott Company, 1913.

Seriodiagnosis and immunity reactions have become so numerous and so complicated and are so extensively applied that the desirability of a reliable guide to the technic of the various procedures must be felt by laboratory workers as well as by students and practitioners in general. The present work is a translation from the third edition of the German original. The descriptions of the various methods are clear and the translation is excellent. One is surprised at the omission of Noguchi's modification of the Wassermann reaction, but we are informed in the translator's preface that this omission is at the request of its author. Some other methods have been added by the translator, but with these exceptions the translation follows closely the German original.

Medicolegal

Interdicted Information and Use of Decoy Letters

(Ackley vs. United States (U. S.), 200 Fed. R. 217)

The United States Circuit Court of Appeals, Eighth Circuit, affirms a conviction of the appellant Ackley of sending a letter through the mail furnishing information where and from whom articles could be obtained which would prevent conception. The articles he tried to sell were a "lady's syringe" and "sanitary powder." The court says that the statute is: "Every article or thing adapted . . . described in manner calculated to lead another to use it for preventing conception" is unlawful. The article may be of legitimate use; in fact it may not prevent conception, but if it is calculated to lead another to use it for such purpose it is unlawful. And that was what the appellant meant when he wrote his letter and when he sent it with the circular through the mail. It is the deposit for mailing that constitutes the offense and when that is done the offense is complete.

Complaint was made of the fact that the letters of the post office inspector to the appellant were answered under the assumed name of a woman, but for which the appellant's letters and pamphlet would not have been mailed. A party who persuades another to commit a crime is an accessory, and as a witness is to be considered as such, and his testimony weighed accordingly. But when officers, or even a private citizen desirous of enforcing the laws, believes from general information, and as in this case, from the pamphlet reciting "Woman's Doctor," "Woman's Friend," "Woman's Syringes," "Woman's Antiseptic Germ-Killing Powders," "Consultations only at my offices," "Syringes sent by freight only," then the officer had the legal, as he had the moral, right to send "decoy letters." It is now too late to complain of decoy letters in such a case.

Liability for Malpractice where Two Independent Physicians Are Employed

(Morey vs. Thybo (U. S.), 199 Fed. R. 760)

The United States Circuit Court of Appeals, Seventh Circuit, reverses a judgment for malpractice rendered against the defendant Morey for error in submitting to the jury a count in the declaration in which Mrs. Thybo alleged that he, "together with one Rice, another physician and surgeon whom the defendant then and there called in to assist him and for consultation," negligently tore and lacerated her vagina and uterus in delivering her of a child, failed to remove all of the afterbirth, and used unsterilized instruments, in consequence of which blood-poisoning developed.

The court says that the undisputed facts were that Morey alone was first employed; that he had no business relation, or even acquaintance, with Rice; that Mrs. Thybo and Rice were old-time friends; that Mr. Thybo, the husband, telephoned to Rice to come to the Thybo home; that after Rice's arrival at 10 p. m. he concluded from his examination that delivery was impossible without the use of instruments; that, by agreement of Rice and Morey, Rice was to use the instruments and Morey to administer the anesthetic; that this division of service was known to Mrs. Thybo and her husband, and not objected to; that deliveries of the child and of the placenta, Morey and Rice each doing his part, were effected during the early hours; that Morey left at 2 a. m., and Rice returned

home at 4 a. m.; and that the subsequent treatment was by Morey.

Whether the forceps were sterilized or not was a matter of sharp dispute; but, of course, the jury's finding that they were not must be accepted. Rice brought his own instruments. After his examination and decision to use forceps, Morey went into the bedroom and got ready to administer the anesthetic. Mrs. Thybo was lying crosswise on the bed. Morey was at her head. After Morey was in that position, he did not see Rice until he came into the bedroom attired in surgeon's garb and with the instruments in his hands. There was no testimony that Morey saw the instruments before Rice brought them into the bedroom. Consequently no basis was afforded by the evidence for a finding that Morey knew of and acquiesced in the use of unsterilized forceps. By the exercise of reasonable diligence, under the circumstances, should he have known? Not unless, while attentively engaged in his own part of the service, he ought gratuitously to have entertained a suspicion that an apparently learned and skilful surgeon was about to commit a gross medical offense, and to have followed up the suspicion by inquiring whether his brother had forgotten to sterilize his hands and his instruments. No such unreasonable burden is imposed by the law.

When the afterbirth was delivered, Rice examined it, found it to be entire, and at once had it disposed of. Morey, from across the bed, looked at it, and to him it appeared to be intact. Nothing in the record warranted a finding that Morey knew that Rice had not removed all of the afterbirth. And here, too Morey was not bound to assume, in the absence of observable indications, that Rice was incompetent. Similarly, with respect to lacerations, Morey, from his position, could not know of them for himself; and from Rice's silence he was not negligent in inferring that no lacerations requiring repair operations had been inflicted. If Morey in his subsequent visits negligently failed to discover promptly and to treat properly the lacerations and the blood-poisoning, those were matters of his own direct responsibility.

Two physicians, independently engaged by the patient and serving together by mutual consent, necessarily have the right, in the absence of instructions to the contrary, to make such a division of service as in their honest judgment the circumstances may require. Each must not only bring to the case the ordinary knowledge and skill of the profession, but also give his best personal attention and care. Each, in serving with the other, is rightly held answerable for his own conduct, and as well for all the wrongful acts or omissions of the other which he observes and lets go on without objection, or which in the exercise of reasonable diligence under the circumstances he should have observed. Beyond this, his liability does not extend.

Communications Made in Presence of Third Parties

(*Denaro vs. Prudential Insurance Company of America* (N. Y.), *139 N. Y. Supp. 758*)

The Second Appellate Division of the Supreme Court of New York says that it was contended that certain communications, to which physicians who had attended the plaintiff were permitted to testify over the objection that they were privileged, were made to the physicians in the presence of the insured's father or others near, and that, under the rule which prevails in reference to attorneys, where communications are made to them in the presence of third parties, it loses the character of a confidential communication, this testimony was not objectionable. The court does not think, however, that the situations are analogous. Where a client visits his attorney with an opposing party, and they all enter into a general discussion, or the attorney is asked to become a witness to the execution of a paper, etc., there is an obvious intent to make the communication public; but when a physician enters a house for the purpose of attending a patient, he is called on to make inquiries, not alone of the sick person, but of those who are about him and who are familiar with the facts, and communications necessary for the proper performance of the duties of a physician are not public because made in the presence of his immediate family or those who are present because of the illness of the person. Of course, the persons who are present are not denied the right to testify. It is only the physician who is bound by the rule; but it is absolute as to him, except in those exceptions provided by the statute. He is forbidden not to reveal communications from his patient, but "any information which he acquired in attending a patient, in a professional capacity, and which was necessary to enable him to act in that capacity;" and it is of no consequence how the information was acquired, whether by some one telling him, or by observation, or in any other manner.

Aggravation of Abnormal Mental or Nervous Condition

(*Cook vs. Village of Mohawk* (N. Y.), *100 N. E. R. 815*)

The Court of Appeals of New York says that the plaintiff charged that the defendant had wrongfully obstructed a natural waterway in such a manner as to discharge the water on the plaintiff's lands, causing damage thereto and affecting the health of the plaintiff's wife, who was one of the occupants. Evidence was admitted which emphasized the element of emotional or mental suffering on the part of the wife when it should have been excluded. The defendant should not be held liable for the mental or nervous disturbance of the plaintiff's wife, due to a cause entirely separate from the flooding of the plaintiff's premises. The wife had a fibroid tumor. If this was responsible for a mental or nervous condition which made her unnecessarily apprehensive of the flooding of the land, and this increased her ailment, the defendant could not be charged with the consequences. Mental suffering is not a legal element of damages in such cases, and there can be no recovery, except for physical ills which can be ascribed directly and with reasonable certainty to the defendant's wrongful act.

Validity of Law Providing for District Hospitals for Treatment of Tuberculosis

(*Brissel vs. State* (O.), *100 N. E. R. 348*)

The Supreme Court of Ohio holds that the act of the legislature of that state, approved March 23, 1909, which provides for establishing and maintaining of district hospitals for the care and treatment of persons suffering from tuberculosis, is a valid exercise of legislative power not repugnant to the constitution. The court says that it may be conceded that the law is not so full in some of its details as might be desired to give facility to its administration, but the court will not let its purpose fail of its beneficent result for this reason alone. In the absence of plain terms to require a different course, such a construction will be put on the statute as will prevent the failure of the manifest purpose of the legislature. The court will not by construction paralyze the arm of the joint board by denying to it the power necessarily incident to the actual and definite grant of authority.

When a board of commissioners has proceeded with the commissioners of other counties to the formation of a joint board referred to, and when that board has been formed and proceeded to the carrying out of the duties imposed on it by the statute, each of the counties whose commissioners have joined in the forming of the board has fixed and definite obligations, with reference to the hospital, which cannot be terminated at the mere will of any such county. The will of the majority must control, so long as it violates no provisions of the law.

Cousin Entitled as a Physician to Recover for Administering Anesthetic

(*Epstein vs. Hugel* (N. Y.), *138 N. Y. Supp. 1072*)

The First Appellate term of the Supreme Court of New York reverses a judgment on a verdict for the defendant and orders a new trial, with costs to the plaintiff to abide the event, in this case where the plaintiff sued for his services, as a physician, rendered to the defendant. The court says that it was uncontradicted that the plaintiff visited the defendant in Connecticut and thereafter the defendant was

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operated on by a Dr. Goodman, the head of a hospital, and that the plaintiff assisted at the operation. But it was claimed by the defendant that the plaintiff, who was his cousin, when he called on him, first called only in a social way, and the defendant endeavored to meet the plaintiff's claim for compensation by claiming that there was a partnership between Dr. Goodman and the plaintiff, and that having paid Dr. Goodman $500 he should pay nothing whatever to the plaintiff for the services rendered by the plaintiff at the operation. The only evidence adduced by the defendant as to the existence of a partnership between the plaintiff and Dr. Goodman was evidence that the plaintiff and Dr. Goodman occupied the same house. The evidence was uncontradicted that the plaintiff assisted, with several other physicians, at the operation and that he personally administered the anesthetic to the defendant. The court thinks that he, at any rate, was entitled to recover for this service.

Evidence of Specializing as Touching Competency in Other Lines

(*Klodek vs. May Creek Logging Co.* (*Wash.*), *129 Pac. R. 99*)

The Supreme Court of Washington affirms a judgment in the plaintiff's favor for damages for an alleged breach of contract on the defendant's part in the matter of furnishing him medical attendance when injured while in its employ. The defendant claimed to have been prejudiced by the introduction of a newspaper advertisement containing the name of the attending physician and describing his specialty and place of business: "Eye and Nose. 206-7 Marion Building." But the court is unwilling to hold that this was error. It says that it will take notice of modern tendencies and conditions in the medical profession, and if a physician holds himself a specialist along certain lines it is no discredit to him to show that fact, and from it raise the inference that he is not keeping up with practice in other lines. At any rate, he, or those relying on him, should not complain of the burden of meeting the *prima facie* showing. The basis of the charge in this case was that the physician was incompetent and unskilled. It was for the jury to say whether he was or not and the fact that he was specializing in other branches of the profession was a circumstance relevant to the issues.

Validity of State Quarantine Regulations

(*Simpson vs. Shepard* (*U. S.*), *33 Sup. Ct. R. 729*)

The Supreme Court of the United States says that quarantine regulations are essential measures of protection which the states are free to adopt when they do not come into conflict with federal action. In view of the need of conforming such measures to local conditions, Congress, from the beginning, has been content to leave the matter for the most part, notwithstanding its vast importance, to the states and has repeatedly acquiesced in the enforcement of state laws. Such laws undoubtedly operate on interstate and foreign commerce. They could not be effective otherwise. They cannot, of course, be made the cover for discriminations and arbitrary enactments, having no reasonable relation to health, but the power of the state to take steps to prevent the introduction or spread of disease, although interstate and foreign commerce are involved (subject to the paramount authority of Congress if it decides to assume control) is beyond question.

Senile Dementia and Testamentary Capacity

(*In re Purcell's Estate* (*Cal.*), *128 Pac. R. 932*)

The Supreme Court of California says that the will which this suit was brought to revoke was made by Mrs. Purcell when she was 71 years of age in anticipation of and shortly before a severe surgical operation on her. It was clear that, although the physician was of the opinion that, as a matter of medical science, her mind was not physically entirely sound, all he meant by that opinion was that she had a slight impairment of memory due to old age which led her to rely on others more than she otherwise would, but that she was nevertheless able to and always did think, talk and act rationally, and manage such of her affairs as she there had in hand with reasonable prudence and judgment. The witness himself appeared to believe that she should have decided about the operation without consulting her brother-in-law, who had been for years her trusted business manager. The medical profession may describe such a condition as senile dementia and declare such a person mentally unsound, but it does not constitute the sort of incompetency or insanity which, in the estimation of law and of men of ordinary sagacity and prudence, renders a person incapable of executing contracts or making a will. Her conduct and conversation, as detailed by physicians, rather tended to show that she herself was aware of her failing memory of recent events, and that she prudently chose to rely on others in whom she had confidence in her business affairs, and that in all other respects she had at least ordinary wisdom, judgment and mental capacity. If there were times when she was incapable of transacting business, the time when she executed the will was clearly one of her lucid intervals. A careful reading of the whole evidence brings the court to the conviction that on the whole case no reasonable person could believe that she had not sufficient mental capacity to make the will in question.

Admitting Lack of Experience or Skill

(*Morrison vs. Allig* (*Ia.*), *138 N. W. R. 510*)

The Supreme Court of Iowa says incidentally, in this veterinary case, that even a practicing physician who informs a person employing him that he lacks experience or skill in the service he is asked to perform is charged with no liability on account of his professional incompetence. It cites Lorenz vs. Jackson, 88 Hun, 200; 34 N. Y. Supp. 652.

Society Proceedings

COMING MEETINGS

Am. Academy of Ophthal. and Oto-Laryn., Chattanooga, Oct. 27-29.
Amer. Assn. of Obstet. and Gynec., Providence, R. I., Sept. 16-18.
American Association of Railway Surgeons, Chicago, Oct. 15-17.
Assn. of Military Surgeons of the U. S., Denver, Sept. 16-19.
American Public Health Association, Colorado Springs, Sept. 9-13.
American Roentgen Ray Society, Boston, Oct. 1-4.
Colorado State Medical Society, Glenwood Springs, Oct. 7-9.
Delaware State Medical Society, Dover, Oct. 13-14.
Idaho State Medical Association, Pocatello, Oct. 9-10.
Indiana State Medical Association, West Baden, Sept. 25-26.
Medical Association of the Southwest, Kansas City, Mo., Oct. 7-8.
Minnesota State Medical Association, Minneapolis, Oct. 2-3.
Mississippi Valley Medical Association, New Orleans, Oct. 23-25.
Missouri Valley Medical Society, Omaha, Sept. 18-19.
Nevada State Medical Association, Reno, Oct. 14-16.
New Mexico Medical Society, Albuquerque, Oct. 2-4.
Utah State Medical Association, Salt Lake City, Sept. 23.
Pennsylvania State Medical Society, Philadelphia, Sept. 22-25.
Vermont State Medical Society, Burlington, Oct. 8-10.
Virginia Medical Society, Lynchburg, Oct. 21-24.
Wisconsin State Medical Society, Milwaukee, Oct. 1-3.

SEVENTEENTH INTERNATIONAL MEDICAL CONGRESS

August 6-12, 1913

(*From Our Regular and Special London Correspondents*)

(*Concluded from page 803*)

Section on Obstetrics and Gynecology

The Section opened August 7 under the presidency of Sir Francis H. Champneys with a discussion on "The Treatment of Hemorrhage from the Placental Site in the Late Months of Pregnancy." The essayists who introduced the discussion were Professor Döderlein of Munich and Professor Essen-Möller of Lund. By arrangement the former confined his remarks to placenta praevia, and the latter to accidental hemorrhage. This accentuation of the natural tendency for the subject to fall into two divisions made the debate, it must be admitted, rather disjointed in character, but it became perfectly clear that the Section was unanimous in dividing all cases of hemorrhage into two groups for purposes of treatment: (1) Those for whom the facilities of a hospital or

nursing home were available, and (2) those in which these were impossible. Practically every speaker urged this distinction and several, indeed, insisted that cases of hemorrhage were as clearly cases for treatment in nursing homes or hospitals as acute surgical conditions.

Professor Döderlein contributed an elaborate series of statistics of methods of treatment under the headings of (1) artificial dilatation by bags, (2) tamponade of the vagina, (3) Braxton Hicks' method, (4) intra-abdominal metreuryse, (5) abdominal cesarean section and (6) vaginal section. He favored operative measures, particularly vaginal cesarean section, for severe cases where facilities were possible, but was still prepared to keep an open mind on the subject, and all the more so since the more obstetrical methods gave a very low mortality. So far as the discussions related to placenta praevia, there appeared more or less a consensus of opinion that Braxton Hicks' method for most cases and cesarean section for severe cases with closed cervix gave the best prospects. Dr. Munro Kerr (Glasgow) urged that this latter should not be postponed till late. Dr. Murdoch Cameron was by no means enthusiastic for cesarean section, but Professor Recasens (Madrid) was sufficiently convinced of its merit to have done it in instances in which the child was dead. Professor Jardine (Glasgow) recommended pituitary extract for all cases of hemorrhage, but Professor De Lee (Chicago) pointed out that rupture of the uterus might follow this drug. Professor Davis (Philadelphia) regarded the condition as being essentially similar to ectopic gestation and therefore treated it on surgical lines. Prof. Paul Bar (Paris) and others called attention of the possibility of an aggravation of shock following section cases, but did not exclude it as a form of treatment. Professor Essen-Möller, limiting himself to the pathology and treatment of accidental hemorrhage, expressed his conviction that a small group of cases are directly attributable to trauma, but that the majority of cases have an association with albuminuria such as to suggest some general intoxication—some condition analogous to eclampsia. For treatment he advocated cesarean section (abdominal or vaginal) for serious cases with closed cervix when the condition made rapid delivery necessary; hysterectomy was only to be done when contraction remained obviously deficient after removal of the child or placenta. He doubted the efficiency of the Rotunda method and in cases of moderate severity would try the effect of rupture of the membranes. Discussing accidental hemorrhage Sir John Byers (Belfast) recommended the Rotunda method of packing, pituitary extract and isotonic salines. Professor Jardine (Glasgow) described two cases of concealed hemorrhage in which the condition was too serious for section and yet the patient recovered under pituitary extract, salines and morphin. Such cases pointed a moral. Dr. Hastings Tweedy (Dublin) described thorough plugging of the vagina and its fornices as being invariably successful in arresting bleeding; the patient, however, might still be in danger.

At the afternoon session (August 7) Professor Frank (Cologne) spoke enthusiastically in favor of subcutaneous symphysiotomy based on an experience of 117 cases. He did not consider infection to be a contra-indication. Professor Favre (Lyons) described an ingenious method of external hysterography. By means of a very simple apparatus which he showed, he had studied the uterine contraction during pregnancy, labor and post partum. Different types of contraction have been noted and it has been found possible to foretell the type of contraction in labor. The action of various drugs had also been studied with care. The communication was listened to with much interest.

At a joint meeting of Sections on Obstetrics, Pediatrics and Hygiene on Friday, August 8, Dr. Chalmers (Glasgow), Dr. Koplik (New York) and Professor Wallich (Paris) reported on the causes of death among infants during the first four weeks after birth. The first of these expressed the opinion that two-thirds of this mortality was to be ascribed to causes suggesting cell-deterioration in the antenatal state. This influence showed no dependence on surroundings and knew no geographical boundaries, but further tabulation of the causes of death in the days and weeks of the first month were urgently necessary for our further information.

Dr. Koplik expressed a somewhat similar opinion as to the importance of prenatal influences. The small quota of syphilis was probably due to the difficulties of diagnosis at so early an age. He considered that 60 per cent. of this deplorable mortality was due to a combination of these prenatal influences with ignorance, neglect and poverty.

Professor Wallich produced interesting statistics showing the variation between legitimate and illegitimate births and between home-nursed infants and those put out to nurse. The mortality from obstetric reasons was decreasing, but much remained to be done in correcting detrimental social conditions.

Many of the succeeding speakers emphasized the incidence of syphilis, more especially Miss A. Louise McIlroy (Glasgow), who startled the meeting by announcing that 49 per cent. of 100 unselected women from an outpatient clinic showed a positive Wassermann reaction. All the families of nine negative mothers also proved positive. This was regarded as indicating an unsuspected degree of latent syphilis.

Sir Francis Champneys decreed that it must be again made fashionable for women to nurse their own children; schools for prospective mothers would in the end prove a cheap investment for the state.

Other speakers were anxious that the statistics should be amplified by the compulsory notification of all cases of stillbirths, while some went so far as to recommend that pregnancy should be made a notifiable disease! Only thus, they said, would efficient supervision of the pregnant woman be obtained.

Dr. T. W. Eden hoped that wet-nursing would be reintroduced on a large scale; there was sufficient healthy human milk for all infants in the world and the whole difficulty was one of distribution.

In the afternoon session of the Section on Obstetrics Professor Pozzi (Paris) described his operation for opening up stenosed cervices associated with sterility, and was enthusiastically supported by Dr. H. Spencer, who regretted that this operation was not better known in England and America. Professor Beuttner (Geneva) recommended an original operation for chronic inflammatory disease of the appendages where it was possible to preserve one ovary, whereby a wedge of the uterine fundus was removed in one piece with the adnexa; the possibility of menstruation was thus left to the patient.

Miss A. Louise McIlroy (Glasgow) discussed some factors influencing the mammary secretion and was constrained to limit such to the ovary. She had failed to confirm Shäfer's experimental work on the galactogogue action of the pituitary gland.

Discussion on Roentgen and Radium Therapy

The Obstetrical and Radiological Sections met August 11, to discuss in joint session the subject of "Roentgen and Radium Therapy in Gynecology." Dr. Albert Schönberg (Hamburg) communicated his results in a paper amplified by carefully tabulated statistics. His report included forty-six cases of myomas, twenty-six of carcinomas, thirty-five of fibrosis uteri, a short series of menstrual abnormalities and some cases of pruritus vulvae; all of these were treated by x-rays. Experiments have proved that the rays have a definite deleterious influence on the male and female genital glands. Their influence on myomata, however, is not solely due to ovarian atrophy, but includes a direct action on the myomatous stroma. The great percentage of myomata did not disappear under treatment, but the percentage of complete relief from symptoms was high. Lasting cure was to be expected with certitude in favorable cases, but a certain number of myomata proved quite refractory; he did not consider that the indications for favorable cases were yet definite. He summed up the general indications for x-rays in gynecology as follows: 1. Induction of menopause. 2. Removal of post climacteric bleedings. 3. Soothing menstrual difficulties at all ages, if possible without sterilization. He preferred to use as few rays as possible and to regulate by a varying exposure. Hemorrhage might increase after the first or second dose, but later decrease.

Dr. Foveau de Courmelles (Paris) made it clear in his opening sentences that neither radium nor x-rays must be regarded as a panacea for all gynecologic ills. He had, however, treated fibroids for the past ten years with x-rays, and, when applied discriminately, was convinced of their great utility. His technic included aluminum filtration (1 mm. in thickness). Hemorrhages and pains or feelings of weight were usually the first to go, but young fibromas, even when of a large size, yielded rapidly. The action was much more rapid about the menopause, but failure occasionally occurred even after a preliminary improvement. Contra-indications were (1) polypi and (2) degenerating tumors. Discussing radium, Dr. Foveau de Courmelles gave a very favorable report in malignant diseases: Of 100 cases of inoperable carcinoma 70 per cent. had improved for from one to four years. The mobility of the uterus increased, hemorrhages and leukorrhea diminished and general improvement rapidly appeared. He applied 1 to 5 egm. of pure radium to the neck of the uterus

for from six to twenty-four hours. He hoped that bad as well as good results would be published.

Professor Kroemer narrated the excellent results obtainable with mesothorium in the treatment of malignant diseases. Professor Döderlein enthusiastically supported the claims of radium and mesothorium and showed lantern slides in natural color of cases in process of treatment. His emphatic stand greatly impressed his hearers. Dr. Jacobs (Brussels) preferred radium to radical operation in extensively malignant cases. He used massive doses and had had cures for from three to three and one-half years. Dr. Walter Tate had not yet seen postoperative recurrences disappear under the treatment. Professor Nagel (Berlin) gave his patients every opportunity of x-ray treatment by experts, but was not greatly impressed by the results. He gave the advice to the Section to "wait and see."

The discussion as a whole was very favorable to nonoperative treatment, but Dr. Spencer emphasized some of the dangers. He considered that every case treated should be at the same time under the care of a gynecologist, and pointed out the possibilities of degeneration or malignancy and the disadvantage of sterilization.

Space will allow only brief comment on the more important topics in the other sections.

The Nature of Cancer

At a combined meeting of the Sections of Chemical Pathology and Bacteriology, held on "The Nature of Cancer," Dr E. F. Bashford, Director of the Imperial Cancer Research Fund, opened the discussion. As the result of the work done by himself and his co-workers for several years on the lower animals, supplemented by observations of the conditions under which cancer occurs in all parts of the world in man, he concluded that it was unlikely that a parasite played any part in the causation. All we know for certain is that some form of irritation is traceable in practically every form. Dr Freund of Vienna was the next speaker. He had been able to demonstrate substances in normal cells which are antagonistic to cancer, and substances in cancer cells which stimulate them to further work. The former substances prevent cancer but the latter destroy the former. Dr. Clowes of Buffalo thought that the equilibrium of the cancer cell depends on the equilibrium of its membrane, which in its turn depends on the equilibrium of the lipoid content of the cells, or, in other words, on its electrolytic content.

The Prevention of Typhoid Fever

In the Section of Naval and Military Medicine a discussion on "Prevention of Typhoid Fever" was opened by Professor Vincent of the Val-de-Grace Hospital, France. After prolonged consideration and experiment the French military authorities decided to introduce inoculation against typhoid fever as a voluntary measure at the beginning of 1912. It is now obligatory in the African colonies. Unpleasant effects rarely occurred and were, as a rule, due to the patient being in an unsuitable condition, ill, tired or recovering from a disease. The vaccine used was polyvalent, being the result of the cultivation of ten different strains of the bacillus; it contained 400 millions of bacilli per c.c. The results have been most satisfactory. In Eastern Morocco not one man of 992 vaccinated contracted typhoid fever, whereas among those not vaccinated 4 per cent. were attacked, and of these one in seven died. Col. Sir William Leishman followed with a description of the work done in the British Army, especially in India. Contrary to the French method, the vaccine was made from only one strain of the bacillus, but the results were no less satisfactory. In the ensuing discussion attention was drawn by several speakers to the great value of vaccine treatment in the course of the disease.

"Hormones" and "Chalones"

In the Section of Physiology the most important paper was that on the internal secretion by Prof. Schäfer. He pointed out that convenient term "hormone" introduced by Starling (from ὁρμάω, I excite) while applicable to the active principle of many internal secretions, had been extended to all and was wrongly applied to principles which did not excite, but checked activity. For these he suggested the term "chalone" (from χαλάω, I relax). It was, however, desirable to have a term which included both the hormones and chalones. The one quality which distinguished them was their drug-like effect on the organs and tissues. A convenient term, suggested by Prof. W. R. Wardie, was autacoid substance.

Radium in Dermatology

In the Section of Dermatology, Mr. Hayward Pinch, director of the Radium Institute, London, opened a discussion on the use of radium in skin diseases. He held that radium was the best treatment for many diseases, such as rodent ulcer, warts and painful corns. Certain forms of eczema of a chronic localized type yielded to one application of the half-strength applicators, while psoriasis—though as with every treatment recurrent—disappeared for some time after a dose of only five minutes' duration. Moles and deep-seated vascular nevi—dangerous to attack with the knife—vanished completely if patiently treated. For keloid radium was the only treatment of value. The leaders of the French school of radium therapy, Wickham, Degrais and Bellot, followed and amply confirmed the English experience.

Treatment of Syphilis

Perhaps the meeting of the Congress which attracted the most attention was a joint session of the sections of Dermatology and Syphilography and of Naval and Military Medicine on the treatment of syphilis by salvarsan and allied substances. The discussion was opened by Professor Ehrlich. He agreed with those authorities who maintained that the action of salvarsan is not direct, but requires a third factor for its completion, which must be sought for in the tissue fluids of the body. Salvarsan could be anchored by the spirochetes in the test-tube but they were not killed. This could be completed only in the living body. He next discussed the toxicity of salvarsan. He had found that rabbits were killed by 0.1 to 0.12 gm. of the alkaline solution, while the acid solution was still more poisonous. He then passed to the febrile reactions observed in its therapeutic use. Some of these were due to technical errors of administration or to administration in the roseolar stage, when the body is saturated with spirochetes. The febrile reaction was due to destruction of the spirochetes and setting free of their toxins. It could be prevented by previous preliminary treatment with mercury. As to the recurrences, about which so much had been written, his opinion was that they were due to insufficient treatment and that a good many deaths were due to the same cause. The mortality after two or three million injections compared very favorably with that of chloroform anesthesia. There were frequent deaths from mercurial treatment, many of which were not recorded. It is curious that Professor Ehrlich did not allude to the fact, attested from many quarters, that deaths from salvarsan have also been suppressed. Deaths with cerebrospinal symptoms were due to want of care in selection of the cases. Here again he did not face the fact that in one well-known type of fatal case coma and convulsions occur, and it has repeatedly been recorded that the patients were young and robust and apparently ideal subjects for salvarsan. Nor did he refer to the fact that this result and others, such as jaundice, nephritis and eruptions, can only be explained as manifestations of arsenical poisoning. Deaths could be avoided, he said, by giving very small initial doses. In the discussion which followed Lieut.-Colonel Gibbard said that he had obtained the best results from a course of two injections of 0.6 gm. salvarsan and nine intramuscular injections of mercury prolonged over nine or ten weeks. In over 3,000 injections of salvarsan there had not been a single death. Professor Wassermann said that the experiences at his laboratory had shown that before the introduction of salvarsan it was rare for a positive reaction of the blood to be converted into a negative one. In cases of fresh infection it was easy by salvarsan to convert a positive into a negative reaction. But if the infection had existed for three or four years it was difficult to remove the positive reaction. This he thought was due to adaptation of the spirochete to its environment. Hence the importance of attempting to sterilize the patient in the early stage. If symptoms of infection of the central nervous system were present it was doubtful whether sterilization could ever be accomplished. Professor Hata, the collaborator of Ehrlich in the discovery of salvarsan, stated the results which had been obtained under his direction in the hospitals of Japan. In 166 cases thirteen relapses had occurred within periods varying from six months to a year. Professor Blaschko of Berlin advised caution in speaking of cures. An interval of ten years must elapse before this could be done. Dr. Fordyce of New York had given between 6,000 and 7,000 injections with only one death. He found that in early cases six injections of salvarsan with ten or twelve of mercury were sufficient. In secondary cases he gave several such courses. Dr. Levy-Bing of Paris said that in twelve cases of early

syphilis injected from the third to the thirteenth day after the appearance of the chancre seven had relapsed within a year. In replying Professor Ehrlich said that there were dangers from the administration of too much salvarsan on the one hand and too little on the other. If the drug had not been proved to fulfil the results which he had at first hoped for, at any rate it was a valuable adjunct in the treatment of syphilis.

State Control of Syphilis

At a joint session of the Section of Dermatology and Syphilography with the Section of Forensic Medicine a discussion took place on "Syphilis: Its Dangers to the Community and the Question of State Control," opened by Professor Blaschko (Berlin) who related how the German Society for the Prevention of Venereal Diseases was founded in 1902. This society was consulted by the government, and many laws were passed at its instigation. The regulation of prostitutes had never been of the slightest use in diminishing disease, for it missed the most important class —the young clandestines. Police supervision of any kind was unsatisfactory. A board of health should be constituted and a system of registration of disease applied to both sexes. Professors Gaucher and Gouterot of Paris also condemned the state regulation of prostitutes. They recommended education of the young, organized treatment of syphilitic prostitutes, suppression and prevention of prostitution by the recognition of paternity, and the conferring on seduced virgins the rights of wives. Dr. Woods Hutchinson (New York) recommended notification which in the form of an anonymous communication by the physician was rendering excellent service in New York. The following resolution was adopted unanimously:

That, sensible of the ravages wrought by syphilis in the community and deploring the inadequacy of existing facilities for the checking of its dissemination, the International Medical Congress calls on the governments of all the countries here represented (1) to institute a system of confidential notification of the disease to a sanitary authority where such notification does not already obtain, and (2) to make systematic provision for the diagnosis and treatment of all cases of syphilis not otherwise provided for.

This resolution was also adopted by the whole congress at the closing general meeting.

The Increase of Lunacy

Sir James Crichton-Browne, the President of the Section of Psychiatry, gave an address in which he stated that all countries from which trustworthy statistics were available showed an increase in the number of lunatics out of proportion to the increase of the population. Comparing the United Kingdom of to-day with it in 1859, the notified insane had increased by 276 per cent. while the population had increased only by 87 per cent. This disquieting fact cannot be fully accounted for by more accurate registration, or by accumulation in asylums of chronic patients. There seemed to be no good reason why insanity should have increased while the health and material condition of the people had markedly improved. The segregation in asylums of a growing number of the insane during the period of sexual activity ought to have diminished hereditary insanity. There were also other factors which should have checked insanity—the diminished consumption of alcohol, the better treatment of tuberculosis and the diminution of puerperal sepsis and syphilis.

The Prevention of Beri-Beri

In the Section of Tropical Medicine a discussion was held on beri-beri in which most of the present-day investigators of the etiology of the disease took part. Professor Eijkmann of Utrecht pointed out that from the standpoint of the deficiency theory it should be remembered that the need of the body for vitamine varied somewhat in the individual, sex, mode of life, occupation, residence, climate and season. The following resolutions were carried by a large majority:

1. In the opinion of this section beri-beri among natives, whose staple food is rice, is induced by the continued and too exclusive consumption of the grain in its highly milled form, by which treatment the cortical and subcortical layers are removed.
2. The section urges on all authorities responsible for the health of native communities the encouragement, by every means in their power, of the restriction of the use of rice of this kind.
3. In view of the proved non-infectiousness of beri-beri, the section suggests to all port authorities the propriety of abolishing quarantine and the restrictive measures at present in operation.

These resolutions were also adopted by the whole congress at the closing meeting

The Museum of the Congress

The Museum of the Congress contained 4,000 different exhibits illustrating for the most part various aspects of recent medical progress, arranged according to the various sections. For the first time there was a department devoted to museum technic. This departure was due to the initiative of the International Association of Medical Museums and was carried out by Dr. Maude E. Abbott. Beautiful specimens were exhibited by Professor Spalteholz of Leipsic showing his method of rendering tissues transparent. Professor Houser of Erlangen showed a series of sections through the whole of the body in different directions.

Professor Wahby of Cairo exhibited the results of injecting various vessels with fusible metal to show their branches. Dr. R. H. Clarke showed a remarkable apparatus by which any particular part in the brain may be localized and reached without damage to adjacent parts. It consisted of a framework placed horizontally on the head, above which was a corresponding frame. On the upper frame was a traveling crosspiece arranged to move either backward and forward or from side to side. It carried a needle, by raising or lowering of which the point could be brought to any part of the brain. Specimens had been brought from all over Europe to illustrate the development of the ovum. A remarkable and apparently so far unique specimen was shown by Dr. F. J. M. McCann of London. It was an ovarian pregnancy in which a four-month fetus was situated in one of the cavities of a multilocular ovarian cyst. The exhibit of Dr. Edwin F. Smith of the United States Department of Agriculture, showing a disease of plants produced by inoculation with a microbe which he claimed to be analogous to cancer in animals, attracted much attention.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

V. 6
1913

American Journal of Anatomy, Philadelphia

July, XV, No. 1, pp. 1-127

1 Postnatal Growth and Variability of Body and Various Organs in Albino Rat. C. M. Jackson, Columbia, Mo.
2 Muscle Degeneration and Its Relation to Origin of Eosinophil Leukocytes in Amphibia (Salamandra Atra). J. A. Badertscher, Ithaca, N. Y.
3 Weights of Abdominal and Thoracic Viscera, Sex Glands, Ductless Glands and Eyeballs of Albino Rat (Mus Norvegicus Albinus) According to Body-Weight. S. Hatai.
4 *Nucleus Cardiacus Nervi Vagi and Three Distinct Types of Nerve Cells Which Innervate the Three Different Types of Muscle. E. F. Malone, Cincinnati.

4. **Nucleus Cardiacus Nervi Vagi.**—Malone says that the histologic character of a nerve cell is an indication of its function. Differences in connections with portions of the organism which differ merely in spatial relations do not involve a difference in the character of the nerve cells, but are associated merely with the location of the nerve cell; for instance, arm and leg muscles, flexors and extensors are all innervated by the same type of cell, although such differences in peripheral connections correspond to differences in the position of the corresponding nerve cells. The three types of muscle are innervated by three distinct types of nerve cell, which, however, are related to one another in such a manner that the cell innervating heart muscle is of a type intermediate between the other two types of cells. The nucleus cardiacus nervi vagi is situated in the middle portion of the sympathetic nucleus of the vagus.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

August, LXVIII, No. 428, pp. 201-400

5 *Emptying Uterus as Method of Treatment of Puerperal Eclampsia. R. Peterson, Ann Arbor, Mich.
6 *Elastic Area in Isthmus of Uterus a Positive and Early Sign of Uterine Pregnancy. L. J. Ladinski, New York.
7 Points in Technic. B. F. Baer, Philadelphia.
8 Renal Calculus in Relation to Kidney and Ureter. S. E. Tracy, Philadelphia.
9 Ovarian Teratomas. C. S. White, Washington, D. C.
10 Leukoplakia Uteri. T. T. Sweeney, New York.

11 Patent Ductus Arteriosus: Report of Case Complicated by Pregnancy. L. B. Rosenthal, New York.
12 Clinical Significance of Urine in Pregnancy. H. C. Bailey, New York.
13 Famous Case of Mary Toft, Pretended Rabbit Breeder of Godalming. C. G. Cumston, Boston.

5. **Treatment of Puerperal Eclampsia.**—Since the cause of eclampsia is still unknown, Peterson emphasizes that its treatment must of necessity be empirical. In a large series of cases of eclampsia prompt delivery gave a maternal mortality of 15.9 per cent., as compared with a maternal mortality of 28.9 per cent. where the delivery was long delayed. Where the uterus is emptied immediately or very soon after the onset of the first convulsion, the maternal mortality is still lower. While in a large group of cases the maternal mortality is 5 per cent. in favor of conservative treatment and spontaneous labor in cases occurring before 1900, between 1900 and 1912, on account of better and more prompt obstetric surgery, the figures are reversed and show that the maternal mortality is lower by 4 per cent. after the radical opposed to the conservative treatment of the complication. Therefore, the treatment of antepartum eclampsia should consist of emptying the uterus as quickly as possible after the onset of the first convulsion. The operative procedure which will empty the uterus the quickest with minimum trauma and shock to the eclamptic mother and child should be selected.

6. **Elastic Area in Isthmus of Uterus.**—The change which Ladinski has invariably found in early uterine pregnancy (first published six years ago) consists of a circular area situated in the median line of the anterior surface of the body of the uterus, just above the junction of body and cervix, that is to say, at the isthmus of the uterus, which varies in size according to the duration of pregnancy, and offers to the palpating finger the distinct sensation of elastic fluctuation. It can frequently be made out as early as the fifth week, when the area is only the size of a fingertip; but it can always be felt in the sixth week, when it is somewhat larger. As pregnancy advances this area increases in size in a crescentic manner, and extends upward toward the fundus until the third month of pregnancy, when nearly the entire anterior body of the uterus presents a fluctuating, cystic feel to the examining finger. The change in the consistency is observed in the anterior wall when the pregnant uterus is in the normal position or slightly retroverted; in extremely retroverted or retroflexed uteri the elastic area is found in the posterior wall, but the sign is usually felt a week or so later than in uteri of normal position.

Bimanual palpation is a prerequisite in eliciting this sign; while the uterus is fixed by counterpressure with the external hand, the anterior wall of the uterus, from the tip of the cervix to the fundus, is palpated with the internal finger or fingers, and if pregnancy exists, the elastic fluctuating area will be felt in the median line of the body of the uterus, immediately above the cervix. Ladinski says that there is no special skill or dexterity required to recognize this elastic area; the ordinary technic and tactile sense necessary in the performance of bimanual palpation will readily detect the difference in the consistency of the isthmus, and a proper interpretation of the character of this change will invariably establish a correct diagnosis. This can be done by the general practitioner as readily as by the specialist; a fact that enhances the importance and value of the sign.

As the result of a careful study of extensive clinical material, Ladinski concludes that this sign is not only constant and reliable and can be detected with greater ease than any other objective sign, but that it is undoubtedly the earliest sign of pregnancy. He insists that any change from the normal in the consistency of the isthmus of the uterus may be regarded with suspicion of pregnancy. The only conditions that show a change in the consistency of the isthmus, are pregnancy, subinvolution, that is, the result of pregnancy, and cystic tumors in the anterior wall of the uterus. In subinvolution, following delivery at term or abortion, there is a change in the same area, but the feel is very soft and doughy, in contradistinction to the tense, elastic and cystic feel of pregnancy. However, in the presence of a soft myoma, or cystic fibroid in the anterior wall of the uterus, the elastic feel elicited in the uterine wall is almost identical with that of pregnancy; and this is the only condition which cannot be differentiated from early pregnancy at the first examination. This is especially true when a soft myoma of the uterus is associated with amenorrhea, as is frequently the case. Under these circumstances further observation and repeated examinations will be necessary to establish a diagnosis.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

August, I, No. 2, pp. 113-192

14 Further Experiences with Beri-Beri in Philippine Islands. V. G. Heiser, Philippines.
15 Character of Rice Which Prevents Beri-Beri and Manner in Which It Is Milled. W. P. Chamberlain, U. S. Army.
16 Polyneuritis Gallinarum Caused by Different Foodstuffs. C. Wellman and C. C. Bass, New Orleans.
17 Peripheral Neuritis in Amazon Valley. C. Lovelace, Porto Vallo, Brazil, S. A.
18 Sprue in Porto Rico and Results of Treatment by Yellowed Santonin. B. K. Ashford, U. S. Army.
19 White Race and Tropics. J. Gulteras, Havana, Cuba.

Archives of Internal Medicine, Chicago

August, XII, No. 2, pp. 117-244

20 *Study of Ventricular Systole-Subclavian Interval, with Discussion of Presphygmic Period. A. W. Swann and E. R. P. Janvrin, New York.
21 *Relation of Hypophysis to Growth and Effect of Feeding Anterior and Posterior Lobe. D. D. Lewis and J. L. Miller, Chicago.
22 Study of Hydrogen Ion Concentration of Urine in Heart Disease. L. H. Newburgh, W. W. Palmer and L. J. Henderson, Boston.
23 *Effect of Diuretic Drugs on Life of Animals with Severe Acute Nephritis. C. Walker and R. P. Dawson, Boston.
24 Bacteriology of Duodenum. W. J. MacNeal and A. F. Chace, New York.
25 Frequency of Low Polymorphonuclear Leukocyte with High Lymphocytic Differential Counts. H. G. Mehrtens, San Francisco.
26 Case of Acromegaly and Polyglandular Syndrome, with Special Reference to Pineal Gland. F. K. Bartlett, Chicago.
27 *Functions of Diaphragm and Their Diagnostic Significance. C. F. Hoover, Cleveland.
28 *Demonstration of Variations in Thyroid Colloid in Conditions of Hyper- and Hypothyroidism. A. P. Jones and A. L. Tatum, Madison, Wis.
29 *Source of Urinary Indol-Acetic Acid in Two Dementia Praecox Patients. E. L. Ross, Kankakee, Ill.
30 *Cultural Results in Hodgkin's Disease. C. H. Bunting and J. L. Yates, Madison, Wis.
31 Clinical Studies on Acid Base Equilibrium and Nature of Acidosis. W. W. Palmer and L. J. Henderson.

20. **Ventricular Systole.**—The following summary is made by Swan and Janvrin of their work: The normal V_1-S time is from .085 to .10 second. It varies widely in certain abnormal conditions of the heart and circulation. The presphygmic period, as determined by calculation from simultaneous tracings of the apex beat, subclavian and radial pulses, is about .015 second shorter than the V_1-S time, and runs parallel to it, variations in one fairly accurately representing vairations in the other. They doubt the accuracy of the presphygmic period as obtained by this method and hope to settle this point more definitely in future work. In cases of auricular fibrillation the variations in the V_1-S time depend on: (a) the length of the preceding diastole, and (b) the strength of the preceding systole or systoles; being longest after a short diastole, and a strong systole, and *vice versa*. After diastoles of a certain length, however, the length of the V_1-S time varies little or not at all. From figures obtained in three cases, the length of diastole necessary for complete rest apparently lay between .322 and .330 second. In cases of broken compensation, the mean V_1-S time was invariably lengthened, except when a marked degree of arteriosclerosis was present. It is probable that, when no disturbing factors coexist, the length of the V_1-S time may be of value in estimating the capability of the heart muscle.

In every one of five cases on which tracings were taken with the patients lying and standing, the V_1-S time was definitely longer in the erect posture. As by far the greatest lengthening occurred in the two cases which were clinically regarded

as having the least competent hearts, it is probable that the degree of lengthening may prove to be of value in prognosis. Aortic regurgitation shortens, and mitral valve lesions lengthen, the V_2-S time. Combined lesions, having opposite effects, tend to offset one another. A marked degree of arteriosclerosis shortens the V_2-S time. The relation of the V_2-S time to blood-pressure is not constant. It tends, however, to become shortened when the pulse pressure is high, especially if at the same time the diastolic pressure is low. The opposite also holds good. Split "C" waves in the jugular tracings were not associated with abnormally long V_2-S times. The speed of the pulse wave in the arm varies with extremes of blood-pressures, being faster in cases with high, and slower in cases with low, blood-pressure. This relationship, however, is not constant. No other factors seem to have any definite effect on the pulse speed. Although it varies widely in different individuals, it is nearly always constant in a given vessel of the same individual.

21. **Relation of Hypophysis to Growth.**—Summarizing the entire field of the rôle of the hypophysis in the growth of the individual in acromegaly in which there exists abnormal development of certain portions of the body, especially in their bony structures, Lewis and Miller state there is apparently hypersecretion of the anterior lobe. In the Fröhlich syndrome of adiposity and failure of sexual development, it is thought by many that there is lessened function of the posterior lobe; experimental information, however, suggests lessened secretion of the anterior lobe, but evidence on this point is not especially convincing. Regarding studies in metabolism in patients with acromegaly, there is again nothing conclusive, and more work must be carried out on this subject before it can be accepted that lessened katabolism takes place as compared with the normal individual.

Turning to the results of partial removal of the hypophysis in animals, only one point having a direct bearing on this subject seems to have been determined, viz., that partial removal of the anterior lobe, when performed on young animals, modifies growth and sexual development in such a manner as to resemble very closely the Fröhlich syndrome. Removal of the posterior lobe, apparently, has no effect on growth. This is a distinct contradiction to those who believe lessened function of the posterior lobe is responsible for the Fröhlich syndrome. Feeding experiments, on animals, fail to furnish any definite evidence that the administration of either the anterior or posterior lobe has any effect on growth.

23. **Effect of Diuretic Drugs on Life of Animals with Severe Acute Nephritis.**—The following conclusions are made by Walker and Dawson from their work and it is held that they suggest a similar effect in man. The diuretic drugs, theocin, caffein and potassium acetate definitely shorten the life of a rabbit having a severe acute experimental nephritis produced by uranium nitrate. Theocin and potassium acetate gave quite parallel results and were slightly more harmful than caffein. Spartein sulphate, although not nearly so detrimental as the other drugs, however, did, in some cases, shorten the animal's life. Water in large amounts is detrimental in some cases, possibly depending on the severity of the nephritis. The diuretics alone in large doses and water alone in large doses when given intravenously to normal animals for a reasonable length of time do not shorten their life and probably are not toxic in themselves. Diuretics are probably contraindicated in severe acute nephritis in man, since in animals in such cases they shorten life.

27. **Functions of Diaphragm.**—Movements of the costal borders during respiration, Hoover found, give valuable aid in differentiating between supraphrenic and subphrenic disease. Also in differentiating between pulmonary consolidation and pleurisy with effusion, and in differentiating between obsolete pleurisy and pleuritic effusion.

Costal border movements enable us to form a comparative estimate of a degree of pulmonary emphysema which exceeds mere filling of the pleural sinus with aerated lung. Movements of the costal borders give indication of the amount of fluid in a pericardial sac and also contribute to an appreciation of cardiac enlargement and an appreciation of the relative enlargements of the two ventricles. Unlike the diaphragm phenomenon of the pleural sinus, these movements of the costal borders and the subcostal angle are always present and can be accurately observed whatever the disease may be and however thick may be the panniculus adiposus. So these signs have a much broader and more accurate diagnostic significance than the so-called Litten diaphragm phenomenon. In making an estimate as to whether a costal border is stationary or diverges from, or is drawn toward the median line, the examiner should apply his thumbs symmetrically placed along the costal borders to serve as indicators. Inspection alone without the aid of palpation of the borders may lead to confusion between elevation of the thoracic cage and widening of the subcostal angle. The thoracic cage may be strongly elevated and still the subcostal angle remain the same size. In fat persons, asymmetrical movements of the costal borders may be obscured without the aid of indicatory palpation.

28. **Variations in Thyroid Colloid.**—The iodin content of the thyroid glands of rabbits serving as test animals was found by Jones and Tatum to be increased directly by feeding commercial desiccated thyroids, and indirectly, by intravenous injections of serum from hyperthyroid rabbits. The iodin content of the thyroid gland was found to be decreased by intravenous injections of serum of thyroidectomized rabbits. Following normal serum injections, the iodin content was sometimes increased, sometimes decreased, or remained constant, indicating individual variations in thyroid activity.

29. **Source of Urinary Indol-Acetic Acid in Dementia Praecox.**—The urinary indolacetic acid in the case of two patients studied by Ross was endogenous.

30. **Cultural Results in Hodgkin's Disease.**—In three cases of Hodgkin's disease Bunting and Gates secured a pure culture of a pleomorphic diphtheroid organism. In two other cultural attempts the organism was recognized, but was not secured in pure culture, and in a sixth case a similar organism, morphologically, was stained in the lesions of a primary intestinal Hodgkin's case. The detailed biologic reactions of this diphtheroid organism have as yet not been completely worked out by them. The strain recovered from the second case, however, has been found to grow readily at 37 C. on the media used to secure the cultures and on ordinary agar-agar. On glycerin-phosphate-agar the growth is almost as luxuriant under strict anaerobic as under aerobic conditions. For luxuriant growth, marked moisture of the medium seems necessary. On a relatively dry medium, growth is slow, and the organisms are found to develop as the long forms, granular, banded, and with many club-shaped involution forms. Branching forms are also noted. These forms are especially well developed on the egg-medium, where they also seem to have a tendency to cohere, so that in stained smears one gets many small groups of organisms radially arranged, with clubbed peripheral elements, somewhat suggestive of a minute actinomyces colony, as seen in section. On moist serum tubes with luxuriant growth, the organisms are short and plump, with polar staining. Many of these forms are coccoid. The authors have noted also, as emphasized by Negri and Mieremet, that in all old cultures coccoid forms predominate, and also that large spherical involution forms are present. A colony or a streak, which at twenty-four hours shows entirely the bacillary form, will twenty-four or forty-eight hours later show an apparent outnumbering of the bacilli by the coccoid elements. The organism stains by the Gram method, though the short plump forms hold the dye less strongly than the longer bacillary forms. It is not acid fast. No spore formation has been noted. The growth of the organism is at first glistening and grayish, but becomes more opaque and of a white color. Apparently, depending somewhat on the reaction of the media, there may be in some early cultures a slight greenish-yellow tint produced. Old cultures on glycerin-phosphate-agar become brownish, and the media itself darkens. Gelatin is not liquefied. There is no early change in reaction in litmus milk. Bouillon is not clouded by the growth. Flecks appear along the side

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of the tube, and a slimy deposit gradually accumulates at the bottom. Plate cultures show a rounded colony with quite regular edge, a fine stippling of the growth and a central dark spot. The colonies are of a glistening gray color at the end of twenty-four hours, becoming gradually of an opaque white color. Altogether, these studies thus far seem to indicate that the authors were dealing with the same organism described by Negri and Mieremet.

Arkansas Medical Society Journal, Little Rock

August, X, No. 3, pp. 67-90

32 Pyelitis; Its Differential Diagnosis. M. D. Ogden, Little Rock.
33 Vital Statistics. F. L. Watkins, Jackson, Miss.
34 Inquiry into Pathology of Dysmenorrhea. C. S. Pettus, Little Rock.
35 Optic Hazard in Obstetric Practice. W. Breathwit, Pine Bluff.

Boston Medical and Surgical Journal

August 21, CLXIX, No. 8, pp. 261-296

36 Need of Re-Organization in Methods and Teaching of Therapeutics. G. Blumer, New Haven, Conn.
37 Vichy, Royat, Aix-Les-Bains. Which? K. C. Mead, Middletown, Conn.
38 *Prognosis and Treatment of Compound Fracture of Base of Skull. A. C. Burnham, New York.
39 *Conclusions from Experiment in Teaching Pharmacology. A. C. Crawford, Palo Alto, Cal.
40 Abdominal, Lumbo-Ilio-Sacral Support and Its Uses, Advantages and Limitations. H. W. Marshall, Boston.

38. **Compound Fracture of Base of Skull.**—Burnham has analyzed thirty-five cases of compound fracture of the base of the skull admitted to the Presbyterian Hospital, New York City, between June 1, 1908, and January 1, 1913. These cases all presented the classical picture of fracture of the base of the skull to which was added bleeding from the nose, mouth or ear. Cases which were surely basal fractures, but in which there was some doubt as to the diagnosis of compound fracture, were not included in this report.

Of these thirty-five patients fourteen died and twenty-one recovered, a general mortality of about 40 per cent. Six patients died during the first forty-eight hours, all in primary shock from the injury received. Eight patients died after the third, and before the fifteenth day, after having partially or wholly recovered from the shock of the injury. Of the eight patients, five died of meningitis. The causes of death and the day on which it occurred in the fatal cases are as follows: Five patients died of meningitis on the fourth (2), sixth (2), and thirteenth day, respectively. Two patients died of broncho-pneumonia on the fourth day. One patient died on the tenth day after secondary hemorrhage and operation.

From these figures it may be seen that, even in those patients who survive the primary shock following compound fracture of the base, there is still a high mortality—in this series 25.5 per cent.

39. **Experiment in Teaching Pharmacology.**—Crawford has become convinced that pharmacology should, like physiology, be taught as a pure science, as much in connection with the university as with the medical school, while the practical applications of pharmacology should be in the hands of scientifically trained clinicians who are specializing in therapeutics and who would be in closer touch with the medical work. Insofar as this point of view is concerned, the necessity for any separation of the department of pharmacology from the university seems unfortunate, as it would tend to lay too much emphasis on the attainment of immediate practical results, and by this separation many pure scientific workers would be lost to pharmacology. For economic reasons it is usually more expedient to have the department of pharmacology in connection with the medical school, but under ideal conditions all of the medical school should be in close relation with the rest of the university. The tendency of teaching in pharmacology is to overload the student with facts, whereas the main purpose should be to teach him to think logically and judicially in this field. It seems to Crawford that emphasis should be laid on the laboratory teaching pharmacology.

Pharmacology has now become such a large field of knowledge that it hardly seems fair to expect one man to teach it along with another branch, such as clinical therapeutics, because the experience required to successfully teach clinical therapeutics is of a different kind from that required to teach pharmacology, and one is very apt to neglect one subject for the other. Many schools now recognize that there are two sides to modern therapeutics and to meet this are offering courses in experimental therapeutics. Such courses must be really an extension of the work in pharmacology, pathology and bacteriology. Successful teaching in pharmacology depends on the man, not on the rules.

Cleveland Medical Journal

July, XII, No. 7, pp. 465-512

41 Operative Treatment of Fractures. W. Bartlett, St. Louis.
42 Urethroscope: Its Importance in Urethral Pathology, Diagnosis and Treatment. S. Englander, Cleveland.
43 Cholecystectomy versus Cholecystostomy. G. W. Crile, Cleveland.
44 Physiology of Sleep. L. W. Potts, Cleveland.
45 Cause of First Respiration. H. V. Wellbrauch, Cleveland.

Indiana State Medical Association Journal, Fort Wayne

August 15, VI, No. 8, pp. 339-384

46 Hydronephrosis Produced by Experimental Ureteral Obstruction. G. D. Scott, Sullivan.
47 Luetin Test in Syphilis. C. G. Beall, Fort Wayne.
48 Treatment of Syphilis. W. S. Ehrich, Evansville.
49 Gonorrhea in Relation to Pregnancy and Puerperal Period. A. S. Jaeger, Indianapolis.
50 Cause and Treatment of Convergent Squint. A. E. Bulson, Fort Wayne.
51 Sympathetic Ophthalmia, with Recovery. F. C. Heath, Indianapolis.

Journal of Biological Chemistry, Baltimore

August, XV, No. 2, pp. 197-383

52 *Colorimetric Determination of Epinephrin in Desiccated Adrenals. A. Seidell, Washington, D. C.
53 *Nature of Depressor Substance of Dog's Urine and Tissues. A. E. Taylor and R. M. Pearce, Philadelphia.
54 Derivation of Ethyl Alcohol Contained in Muscle. A. E. Taylor, Philadelphia.
55 Nature of Sugars Found in Tubers of Arrowhead. K. Miyake, Sapporo, Japan.
56 *Action of Rennin on Casein. A. W. Bosworth, Geneva, N. Y.
57 Formation of Indophenol at Nuclear and Plasma Membranes of Frogs' Blood-Corpuscles and Its Acceleration by Induction Shocks. R. S. Lillie, Philadelphia.
58 Dominance of Roquefort Mold in Cheese. C. Thom and J. N. Currie, Washington, D. C.
59 Volatility of Sulphuric Acid when Used in Vacuum Drying. H. C. Gore, Washington, D. C.
60 Racemization of Proteins and Their Derivatives Resulting from Tautomeric Change. H. D. Dakin and H. W. Dudley, New York.
61 Action of Enzymes on Racemized Proteins, and Their Fate in Animal Body. H. D. Dakin and H. W. Dudley, New York.
62 Determination of "Urea Nitrogen" in Cultures of Certain Bacteria. A. I. Kendall and A. W. Walker, Chicago.
63 Influence of Starvation on Creatin Content of Muscle. V. C. Myers and M. S. Fine, New York.
64 Relation of Growth to Chemical Constituents of Diet. T. B. Osborne and L. B. Mendel, New Haven, Conn.
65 *Influence of Carbohydrate Feeding on Creatin Content of Muscle. V. C. Myers and M. S. Fine, New York.
66 Elimination of Ingested Ammonium Salts in Dog on Adequate Mixed Diet. F. P. Underhill, New Haven, Conn.
67 Elimination of Ingested Ammonium Salts During Period of Prolonged Inanition. F. P. Underhill, New Haven, Conn.
68 Utilization of Ammonium Salts with Non-Nitrogenous Diet. F. P. Underhill and S. Goldschmidt, New Haven, Conn.
69 Communications of Folin and Denis. E. Abderhalden.
70 Cerebrosides of Brain Tissue. P. A. Levene, New York.
71 *Influence of Pancreatic and Duodenal Extracts on Glycosuria and Respiratory Metabolism of Depancreatized Dogs. J. R. Murlin and B. Kramer, New York.

52. **Colorimetric Determination of Epinephrin.**—Attention is called by Seidell to the defects of the previously proposed potassium iodate method for commercial suprarenal glands and explanations of the sources of error in it are given. The phosphotungstic acid method of Folin and Denis has been applied to a series of desiccated suprarenals and, although it possesses many excellent features, certain disadvantages which apparently render it unsuitable for the standardization of commercial glands, are pointed out. The gold chlorid reagent was

found to yield a maximum color only when a definite ratio was maintained between the amount of epinephrin and of gold, thus seriously restricting the practical quantitative application of this reagent. The new method proposed in the present paper consists in the use of manganese dioxid as the reagent for developing a color with aqueous epinephrin solutions or suprarenal gland extracts. The color so developed is estimated by comparison with artificial color standards made by mixing cobalt chlorid, gold chlorid and water.

53. **Depressor Substance of Urine and Tissues.**—The author's attempts to isolate by the methods of Kutscher, Lohmann and Engeland the depressor substance occurring in the urine, pancreas and duodenal loops of the dog, and which have an effect on blood-pressure analogous to that of B-iminazolylethylamin, failed.

56. **Action of Rennin on Casein.**—The conclusions drawn by Bosworth from his investigation are as follows: A solution of calcium caseinate neutral to litmus and free from all other salts is not curdled by rennin. A solution of calcium caseinate acid to litmus, which contains two equivalents of base for each molecule of casein, is curdled by rennin. Solutions of ammonium, sodium or potassium caseinates are not curdled by rennin. In such solution, however, the casein is changed to paracasein, the paracaseinates of these bases being soluble. When paracasein is produced from casein by the action of rennin no other substance is formed. Two molecules of paracasein are produced from each molecule of casein as a result of this action. Rennin is not, strictly speaking, a coagulating ferment; the coagulation being a secondary effect, the result of a change in solubilities. Rennin action is probably a hydrolytic cleavage and may be considered the first step in the proteolysis of casein. It would follow from this that the action now attributed to rennin may be produced by any proteolytic enzyme.

65. **Carbohydrate Feeding and Muscle Creatin.**—The influence of carbohydrate feeding on the creatin content of rabbit muscle, Myers and Fine found, is similar to that observed in starvation, although after a long period of feeding there may be an even greater reduction in the creatin concentration. The decreased elimination of creatin after feeding carbohydrate is primarily dependent on the sparing action of carbohydrate on the muscle protein, or, in other words, is simply one phase of the sparing action of carbohydrate on protein metabolism.

71. **Effects of Pancreatic Extracts on Glycosuria.**—Intravenous infusion of pancreatic extract made from cow's pancreas by Knowlton and Starling's method raised the D:N ratio on the days immediately following, when the urine was collected in twenty-four-hour periods. When the urine was collected in short periods a similar extract produced a slight fall in the hourly dextrose elimination and in the D:N ratio in the hours immediately following injection. A mixed extract made in the same manner from dog's pancreas and duodenal mucosa produced a greater fall and in one instance complete disappearance of the urinary sugar. The fall, however, was followed in three to ten hours by a compensating increase. A similar quantity of Ringer's solution made alkaline to about the same degree as the medium for the extract, produced an effect on the glycosuria almost identical. A 2 per cent. Na_2CO_3 solution likewise caused a sharp decline in the excretion of sugar and a 2 per cent. HCl solution by stomach tube, produced a sharp increase. The increase in the one case continued for about the same length of time as the decrease of the medium on glycogenesis and glycogenolysis. It is possible also that the pancreatic extract affected the renal permeability. Neither extract of pancreas alone nor the double extract of pancreas and duodenal mucosa produced, within the time of maximal effect on the glycosuria, any effect on the respiratory quotient which could be interpreted as an index of increased combustion of carbohydrate. The total energy production of a depancreatized dog was found to be 42 per cent. greater than that of the same dog while normal. Transfusion of 200 grams of normal dog's blood likewise produced no observable effect on the R. Q. of a depancreatized dog. Murlin and Kramer conclude that neither the use of the Knowlton-Starling extract nor the transfusion of normal blood is yet a measure of any practical importance in restoring to the depancreatized dog the ability to burn sugar.

Journal of Cutaneous Diseases, New York

August, XXXI, No. 8, pp. 541-610

72 Presence of Spirochaeta Pallida in General Paralysis and Tabes Dorsalis. H. Noguchi, New York.
73 Luetin Test. F. Schmitter, U. S. Army.
74 Results of Salvarsan Therapy in Malignant Syphilis Praecox, Syphilid of Palms and Gumma of Tongue. H. F. L. Ziegel, New York.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

July, IV, No. 6, pp. 453-558

75 *Absorption and Excretion of Ammonia by Lungs. H. McGuigan, Chicago.
76 Some Examples of Effect of Asymmetric Nitrogen Atoms on Physiologic Activity. P. P. Laidlaw, Herne Hill, London.
77 Pharmacologic Action of Helenin, Active Principle of Helenium Autumnale. P. D. Lamson, Würzburg, Germany.
78 Study of Action of Various Diuretics in Uranium Nephritis, with Special Reference to Part Played by Anesthetic in Determining Efficiency of Diuretic. W. deB. MacNider, Chapel Hill, N. C.
79 Effect of Varying Tonicity on Anaphylactic and Other Reactions of Plain Muscle. H. H. Dale, Herne Hill, London.
80 Influence of Phenylquinolin Carbonic Acid (Atophan) on Uric Acid Elimination. O. Folin and H. Lyman, Boston.
81 *Action of So-Called Emmenagogue Oils on Isolated Uterine Strip. D. I. Macht, Baltimore.

75. **Absorption and Excretion of Ammonia.**—McGuigan claims that traces of ammonia are excreted, and probably absorbed, normally by the lungs. Ammonia and ammonium salts in stronger concentration are readily absorbed and excreted. Absorption is shown by stimulation of the respiration, spasmodic twitching of the muscles and by an increase in the ammonium content of the blood. Excretion is shown by an increase in the ammonium content of the fluid of the lungs.

81. **Action of Emmenagogue Oils.**—The following oils were studied by Macht: *oleum hedeomae* (pennyroyal), *oleum sabinae* (savine), *oleum tanaceti* (tansy), *oleum rutae* (rue), *oleum thymi* (thyme), *oleum terebinthinae* (turpentine), and apiol. Weak solutions or emulsions of these were made up with Locke's solution. Controls were also made with an emulsion of a neutral oil (olive oil). All of the substances used, even in small amounts, exhibited absolutely no stimulating action on the uterus. On the contrary they caused it to relax, and even paralyzed it. Pennyroyal, tansy and apiol were the most toxic of the group. The least deleterious of the oils was turpentine. It was necessary to use stronger emulsions of this drug to obtain the same effect. The paralytic action of the oils studied is exerted not only on the normal uterus, but also on one which is under the influence of a uterine stimulant.

Kansas Medical Society Journal, Kansas City

August, XIII, No. 8, pp. 305-344

82 Gall-Bladder. E. E. Hubbard, Shawnee.
83 Pseudoleukemia. R. H. Hertzler, Newton.
84 Office Treatment of Pelvic Diseases. J. T. Scott, St. John.
85 Relation of Puerperium to Present and Future Health of Woman. W. C. Bundrant, Partridge.

Kentucky Medical Journal, Bowling Green

August 15, XI, No. 16, pp. 689-744

86 Fallacy of Theory of Maternal Impressions. T. A. Fraser, Marion.
87 Pestiferous Fly. W. Blair, Columbia.
88 Diagnosis of Typhoid. W. M. J. Smiser, Skylight.
89 Difficult Labor. H. C. Clark, Falmouth.
90 Treatment of Uncinariasis. E. D. Burnett, Anchorage.
91 General Demeanor of Physician. D. G. Simmons, Adairville.

Michigan State Medical Society Journal, Grand Rapids

September, XII, No. 9, pp. 453-512

92 Operative Relief of Obstructive Hypertrophy of Prostate. P. M. Pilcher, Brooklyn.
93 Enterostomy and Enterotomy as Life-Saving Procedures. C. W. Barrett, Chicago.
94 *Method for Transfusion of Fresh Normal Blood. H. A. Freund, Detroit.
95 Anesthesia. J. B. Jackson, Kalamazoo.
96 Use of Pituitrin in Obstetrics. W. E. Wels, Detroit.

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97 Emergency Abdominal Surgery in Practice of Country Practitioner. E. Sawbridge, Stephenson.
98 Syphilis and Salvarsan. R. J. Walker, Saugatuck.
99 Country Probationer. H. L. Simpson, Detroit.
100 Removal of Foreign Bodies from Eye; with Report of Three Cases. W. Haughey, Battle Creek.
101 Women Physicians of Michigan. F. A. Rutherford, Grand Rapids.

94. **Transfusion of Blood.**—The instrument designed by Freund consists of a well-fitting aspirating syringe, holding 20 c.c., a "two-way" stop-cock irrigator with a glass cylinder attached to this device, and two tubes with needles attached leading from each tube. The glass cylinder is fitted also with a small stop-cock. The whole is mounted on an inclined wooden base, which rests on the table. Into the glass cylinder is poured normal physiologic salt solution a little above body temperature. By opening the stop-cock of the cylinder and drawing out the plunger of the syringe, normal salt solution is taken into the syringe to about 5 c.c. The stop-cock is then closed. Both needles are then held vertically and normal saline washed through them until all air is removed from the rubber tubing and the needles. Four c.c. of normal salt solution still remains in the syringe. The larger needle is then inserted into the median basilic of the donor and fastened there with adhesive. The lever of the stop-cock is turned, permitting of suction to be made from the donor. This shuts off the saline that remains in the tube going to the recipient. Immediately suction is made on the tube in the vein of the recipient and the blood flows into the syringe. From the average vein 16 c.c. may be drawn into the syringe in less than half a minute. The syringe is revolved so as to thoroughly mix the blood and the saline.

As soon as the syringe is filled, a little of the mixture of the blood and saline is injected back into the donor, so as not to leave fresh blood without admixture of saline in the tube. The lever of the stop-cock is then turned toward the recipient, who first receives the saline remaining in the tube and then receives the entire injection of blood. At this point, for safety, if the experiment has not proceeded within the space of three minutes, it is well to wash both the donor's and the recipient's needles and tubes with a little saline solution, which may be obtained by opening the stop-cock from the cylinder and drawing salt solution into the syringe again. This may be done again and again until as much blood is injected as desired. Freund has employed this procedure successfully in seven cases up to the present time. From one individual, a polycythemic patient, he took blood, 160 c.c. in all, and injected into a pernicious anemic. Recently, blood was taken from the jugular vein of a normal rabbit and reinjected into one of the veins of the ear. In all, but 20 c.c. was taken. The purpose was to observe if any change occurred either in the heart or lung from the experiment. The animal was killed at the end of twenty-four hours, and the pathologic examination of the heart and lungs revealed no gross changes, such as might come from the injection of a small clot or particle into the lungs, giving rise to an infarct or pulmonary embolus.

Military Surgeon, Washington, D. C.

August, XXXIII, No. 2, pp. 101-199

102 Work of Medical Department of Ohio National Guard in Floods of 1913. C. Lynch, U. S. Army.
103 Two Turkish Hospitals. D. U. Carpenter, U. S. Navy.
104 Post Anesthetic Nausea. A. G. Wilde, U. S. Army.
105 Epidemic Meningitis and Meningo-Bacterin. S. H. Wadham, U. S. Army.
106 Specializing in Medical Corps with Special Reference to Obstetrics and Gynecology. S. M. DeLoffre, U. S. Army.
107 Heroin and Soldiers. R. M. Blanchard, U. S. Army.
108 National Guard and National Defense, with Special Reference to Sanitary Service. G. M. Blech, Chicago.
109 Medical Relief during Volcanic Eruption. N. Du Val Brecht, U. S. Army.

Ohio State Medical Journal, Columbus

August, IX, No. 8, pp. 567-602

110 Hemorrhages of Menopause and Cancer. A. Crotti, Columbus.
111 Forcible Correction (Abbott's Method) of Roto-Lateral Curvature of Spine (Scoliosis). W. G. Stern, Cleveland.
112 Value of Auscultatory Method for Determination of Blood-Pressure. W. E. R. Schottstaedt, Toledo.

Ophthalmic Record, Chicago

August, XXII, No. 8, pp. 497-532

113 Unusual Types of Punctate Cataract. T. B. Holloway, Philadelphia.
114 Orbital Cellulitis Caused by Staphylococci. S. B. Muncaster, Washington, D. C.
115 Reflecting Book Marker for Teaching Readers how to Avoid Eye-Strain. J. N. Rhoads, Philadelphia.
116 Huge Orbital Osteoma. E. M. Blake, New Haven, Conn.
117 Sarcoma of Orbit Following Mules' Operation. D. Wood, Minneapolis, Minn.
118 Fixation Forceps. F. Allport, Chicago.
119 Early Sign of Paralysis of Facial Nerve. A. Rochester, Chicago.

Texas State Journal of Medicine, Fort Worth

August, IX, No. 4, pp. 123-146

120 Psychic Treatment of Nervous Disorders. E. Sandoz, Bern, Switzerland.
121 Pellagra. K. H. Beall, Fort Worth.
122 Pellagra as Public Health Problem. W. Shropshire, Yoakum.
123 Hookworm Problem: Synopsis of Work of Hookworm Commission of Texas State Board of Health. M. H. Boerner, Austin.
124 Symptoms and Diagnosis of Uncinariasis. O. H. Judkins, Plainview.
125 Some Needed Legislation in Regard to Control of Trachoma. N. B. Ellis, Houston.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine and Parasitology, Liverpool

August, VII, No. 3, pp. 339-356

1 Morphology of Trypanosome (T. Nigeriense, N.SP.) from Case of Sleeping Sickness from Eket, Southern Nigeria. J. W. S. Macfie.

Australasian Medical Gazette, Sydney

July 5, XXXIV, No. 1, pp. 1-19

2 *Unusual Cases of Hydatid Disease. H. M. O'Hara.
3 Case of Hydatidiform Degeneration of Chorion. W. Butement.
4 Case of Sarcoma of Iris. J. L. Gibson.
5 *Two Cases Simulating Appendicitis. E. S. Jackson.

July 12, No. 2, pp. 20-42

6 Adelaide Medical School. B. Poulton.
7 Series of Cases of Small-Pox. C. E. Corlette.
8 Dr. Mawson's Expedition to Antarctic. S. E. Jones.

July 19, No. 3, pp. 43-70

9 Urinary Diagnosis with Special Reference to Ureteral Catheterization. R. G. Craig.
10 Ureteral Catheterization in Obstetrics. S. H. Harris.
11 Case of Autogenous Streptococcal Septicemia. M. S. Veech.
12 Bacteriology of Calf Lymph, at Present Supplied for Vaccination in Sydney. H. Tebbutt.

July 26, No. 4, pp. 71-94

13 Case of Multiple Hernia, Obturator, Ischiatic and Femoral, in Adult. H. Rischbieth.
14 Rupture of Perineum. C. E. Williams.
15 Case of Cholecystenterostomy for Obstruction of Common Bile Duct Due to Multiple Hydatid Disease. G. H. Abbott.
16 Bacteriology of Calf Lymph, at Present Supplied for Vaccination in Sydney. H. Tebbutt.

2. **Unusual Cases of Hydatid Disease.**—The cases cited by O'Hara are: 1. Hydatid at the back of the eye-ball. 2. Hydatid on the brain. 3. Hydatid of the left lung, implicating the pericardium. 4. Spontaneous fracture of the humerus caused by hydatid cyst in the shaft of that bone. 5. Hydatid in the jawbone simulating actinomycosis. 6. Hydatid in the apex of the right pleura simulating aneurysm of innominate artery. 7. Hydatid on the posterior surface of the liver pressing on the head of the pancreas, simulating disease of that gland. 8. Hydatid at the base of the lung, causing laryngitis. O'Hara finds that by means of the Roentgen rays it is now an easy matter to locate pulmonary hydatid cysts, the shadow outline shows so clearly in the lung tissue.

5. **Two Cases Simulating Appendicitis.**—In one of these cases Jackson found no appendix, no cecum and no ascending colon. The ileum appeared to end under the liver, where its junction with the colon was suspended to the upper part of the outer wall of the abdomen by a distinct ligament. From the point of this attachment the colon ran transversely across the abdomen in the usual situation, and was attached to the wall of the abdomen in a similar way to its commencement. Searching in the mesentery in the right hypochondrium for any remains of an appendix, he found two calcified glands; so hard

and angulated was one of them that one could believe easily that the pressure of a neighboring organ would cause considerable pain in that organ. He removed both glands. After the first forty-eight hours the patient was entirely freed from the pain that he had formerly complained of. The removal of the calcified glands seemed to have made that difference to him. Both cecum and appendix were found in the left side. To the inner side of the ascending colon was found the cause of the trouble—a coil of intestine nearly a foot long pushed through a hole (as it appeared) in the mesentery and under a broad band of peritoneal fold, so as to obstruct its circulation.

British Medical Journal, London

August 16, II, No. 2746, pp. 353-436

17 *Chemotherapy. P. Ehrlich.
18 *Heredity. W. Bateson
19 *Relationship between Medicine and Public Health. J. Buras.
20 *Necessity for More Thorough Control of Milk-Supply in Combating Surgical Tuberculosis in Childhood. H. J. Stiles.

17. **Chemotherapy.**—What is the exact nature of the problem the chemiotherapist sets out to solve when called in to prescribe for a man or an animal infected with some living parasite—protozoon, trypanosome, spirochete—visible or ultramicroscopic bacterium? The problem is, how to find a drug that will kill the parasites without hurting their host. To kill the parasites in test-tube experiments is easy, and can be done by any one of the many disinfectants and antiseptics in daily use. In the animal body, however, these disinfecting agents show a uniform tendency to attach themselves to and destroy the tissues of the host, leaving the infecting agent comparatively unharmed. To use Ehrlich's terminology, such drugs are organotropic and not parasitotropic. The chemotherapist has, therefore, to make and try a succession of synthetic compounds of such a chemical constitution as his experience shows him are likely to be parasitotropic in a high degree, organotropic as little as possible. Patience, skill, luck and—last, but not least—money, are the four chief factors on which his chances of success depend.

Chemical compounds can only act on the cells (whether the cell-bodies of parasites or the cells of the tissues that build up the human body) to which they are fixed; the only agent that can fix them is chemical affinity. Clearly, then, drugs will only be fixed by the cells that have a definite chemical affinity for them, or, in other words, have a definite chemical relationship to them. Mercury and arsenic are both metals highly poisonous to living protoplasm. But their salts will cease to be poisonous, however much mercury or arsenic they may contain, unless they have unsatisfied chemical affinities that enable them to combine with the living protoplasm, and so get to work on it. The atomic groups of the protoplasm that effect these chemical combinations with drugs are called "chemioreceptors" by Ehrlich; in the case of the drugs, the atomic groups that combine with the protoplasm are called "haptophores"; the atomic groups that exert the toxic action on the protoplasm are called "toxophores." To take the case of salvarsan, whose structural formula is set out by Ehrlich, the trivalent arsenic molecules are the toxophores, the ortho-amidophenol groups are the haptophores; the rest of the molecule is therapeutically indifferent.

There are many obstacles in the chemiotherapists's path, and Ehrlich points out a few of them in the course of his address. To begin with, the difficulty of finding a synthetic drug that will kill the parasites without harming the host is enormous. Next, unless the parasites are all slain by a single injection at one fell swoop, the survivors may acquire a degree of immunity to the drug that will enable them and their progeny to live through subsequent injections. Again, the animal organism may contain dead corners, spots to which injected drugs have no means of access, such as the space which is filled by the cerebrospinal fluid; and parasites may be harbored safely there when they are killed throughout the rest of the body by the injection of some parasitotropic drug. A fourth difficulty may lie in this—that the patient unhappily chances to be supersensitive to the drug, by an idiosyncrasy that makes it far more toxic to him than it is to the ordinary individual. Ehrlich indicates the ways in which these and other difficulties are to be vanquished.

Chemiotherapy aims at the cure of infectious diseases by sterilizing the patient and killing the infecting agent in his tissues; what has been somewhat magniloquently termed a *Therapia sterilisans magna* — cure by sterilization on the large scale—is the objective. Should some of the parasites survive the first attempt at their destruction, the chemiotherapist falls back on a *Therapia sterilisans fractionata*, takes two or more bites at the cherry, and kills off the surviving parasites with a second or possibly more injections of his synthetic drug. Frambesia, or yaws, a tropical cutaneous complaint caused by a spirochete, is almost always cured by a single injection of salvarsan. Syphilis is now recognized to be less amenable to the treatment than this; and, though a satisfactory cure by one injection is claimed for a fair percentage of the cases, the syphilitic will generally have to take his sterilization by salvarsan in fractional or fractionated doses. In the human and animal diseases caused by protozoa and spirilla, speaking generally, the results obtained have been extraordinarily successful; Ehrlich believes that the whole host of bacterial infections will be driven into the corner by the chemiotherapist before many years have passed.

18. **Heredity.**—Bateson has examined human pedigrees, and the result of his search soon showed that many of the more definite hereditary diseases and malformations follow one or other of the systems with which Mendelian analysis has familiarized us. The first condition thus recognized to have a simple Mendelian inheritance was the peculiar malformation known as brachydactyly, described in America by Farabee. Another example is congenital cataract, studied by Nettleship. Both these conditions descend as dominants. It is characteristic of them that unaffected members of the families do not transmit. Not having in them the critical element which causes the condition, they cannot pass it on to their posterity. In the human examples the individuals affected are almost always heterozygous, and hence among the children which are born to their marriages with normal persons, we expect the affected and unaffected to be in equal numbers. In regard to the large group of diseases of nervous origin, such as Friedreich's disease, Thomsen's disease, and others, these sources of difficulty are especially serious; and from study of many genealogies Bateson has come to the conclusion that most of them are essentially dominants. Of recessive conditions in man we have less abundant evidence. Inasmuch as they usually appear from the unions of parents both apparently normal, though heterozygous for the condition, their occurrence is rare and sporadic.

The constant intermarriage of families in the valleys of Sweden, Norway and the Alps, Bateson found, gives the best opportunity for the study of this form of descent. Lately also, the American students of genetics have produced evidence making it clear that feeblemindedness has at least one of the marked features of a recessive condition. When both parents are feebleminded they have no normal children. It is nevertheless difficult to regard this condition as a simple recessive, for unions of the feebleminded with normal persons almost always produce some feebleminded children. Other conditions which exhibit a behavior characteristic of recessives are albinism, myoclonus epilepsy and alkaptonuria. They may all appear in the children of normal persons, with special frequency as the result of marriages of related parents, and there can be no reasonable doubt that these conditions are due to the loss of some factor present in normal persons.

Attention is called to a remarkable group of cases in which the appearance of abnormality may almost without doubt be regarded as partially dependent on the conditions to which the soma is subjected. Of these, Bateson mentions in particular some of the congenital abnormalities, such as hallux valgus, and some of the congenital deformities of the joints, as, for example, dislocation of the hip of the radius. In these cases, he says, we meet the curious fact that whereas the condition most usually appears in the offspring of the normal parents, it may, in certain families, be transmitted from parent to offspring as a dominant. The next group of cases is one in which

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the descent of the abnormality is limited wholly or partially by sex. Of these, the best known examples are those of the descent of color blindness, hemophilia, and one of the forms of nystagmus.

Referring to the descent of various forms of insanity, nothing has been made out with certainty with the exception of hereditary chorea, which behaves as a dominant, and the condition somewhat vaguely described as feeblemindness, which behaves as a recessive. The genetic analysis of insanity is at the present time practically impossible from the fact that the diagnosis of the various forms of insanity is by no means clear, and also from the fact that the conditions of life have obviously much to do with the development of such weaknesses.

19. **Medicine and Public Health.**—Burns takes up many topics: the saving of life; the doctrine that dirt makes disease; typhus fever; enteric fever; stages in registration of disease; the scientific period of disease prevention; Lister and surgery; Semmelweis and puerperal fever; factors in reduction of tuberculosis; a partial antidote to urbanization; alcoholism and disease; application of science in medical practice; the ever-increasing institutional treatment of disease; the work of the nurse, and national interdependence in relation to health.

20. An abstract of this paper appears in the report of the *International Medical Congress.*

Glasgow Medical Journal

August, LXXX, No. 2, pp. 81-159

21 Avoidance of Unsightly Scar Deformities in Operative Treatment of Cervical Lymphadenitis. J. H. Nicoll.
22 Vaccine Therapy in Treatment of Gonococcal Vulvovaginitis. W. R. Jack.
23 Congenital Occlusions of Esophagus and Lesser Bowel. G. H. Edgington.

Journal of Laryngology, Rhinology and Otology, London

August, XXVIII, No. 8, pp. 393-452

24 History of Rhinolaryngology in Great Britain. S. Thomson.
25 Foundations of British Otology. M. Yearsley.
26 Work Done in Britain on Diseases of Nasal Cavities and Their Accessory Sinuses. A. L. Turner and W. G. Porter.
27 Otolaryngological Societies of Great Britain and Ireland. D. Grant.
28 British Ear and Throat Clinics Historically Considered. R. Kershaw.
29 Clinics of Britain for Diseases of Throat, Nose and Ear. D. McKenzie.

Lancet, London

August 26, II, No. 4694, pp. 445-520

30 *Chemotherapeutics: Scientific Principles, Methods and Results. P. Ehrlich.
31 *Heredity. W. Bateson.
32 *Relationship between Medicine and Public Health. J. Burns.
33 Theories of Immunity and Anaphylaxis. A. Besredka.
34 Clinical Applications of Pathologic Chemistry. O. Folin.
35 Ophthalmic Progress in Egypt. A. F. MacCallan.
36 *Dosimetric Method of Administering Chloroform. D. W. Buxton.
37 *Infection of Urinary Tract in Children by Colon Bacillus. J. Thomson.

30, 31 and 32.—See the *British Medical Journal.*

36. **Dosimetric Method of Administering Chloroform.**—Since adopting the dosimetric method Buxton has seen fewer complications, and has been enabled to safeguard patients from chloroform collapse. The appearance of a patient after even a prolonged inhalation of chloroform, when a dosimetric method has been employed, is in striking contrast to what is seen when unstinted quantities of the drug have been inhaled. The one is of almost normal color and suffers few after-effects, while the other is pale, drawn, vomits and is collapsed to a greater or less degree. It is the difference between chloroform acting as an anesthetic and chloroform acting as a tissue poison—between anesthesia and toxemia. Buxton's experience is chiefly with the Vernon-Harcourt regulator. Its maximum is 2 per cent.; however, by using an increase tube, an undesirable addition according to Buxton, it is possible to produce 2.5 per cent. or, indeed, any percentage if the inhaler is specially graded for it. Buxton's experience, now extending over nearly ten years, has convinced him that, provided an accurate technic is practiced, 2 per cent. need not be exceeded. Very muscular and very obese subjects take a longer time to go under, and when time is an important matter, as in hospital work, a rapid induction with nitrous oxid and ether preceded by an injection of gr. 1/100 of atropin is often serviceable.

Buxton employs oxygen with the chloroform, not because the patient has any difficulty in breathing, or becomes cyanosed when this inhaler is in use, but because he is convinced that oxygen by maintaining the vigor of the tissues is a safeguard under any form of anesthesia. Oxygen also lessens shock and counteracts the tendency of the tissues to weep when large areas are incised or denuded of their covering. The failure to produce complete anesthesia with a 2 per cent. vapor is usually if not always the result of badly fitting masks or unskilled handling, so that although the machine registers 2 per cent. the actual percentage inhaled falls short of it. The use of a flanged mask lessens the danger of leakage. In some surgical operations deeper narcosis than the third degree—i. e., anesthesia—is called for by the surgeon. When this is so, Buxton finds the use of a dosimetric inhaler more than ever desirable, since the danger zone is entered, and the anesthetist requires a scientific instrument which enables him to control the higher percentage, increasing it at critical points in the operation and lowering it when these are passed. At all events, he knows exactly what percentage he is employing, and retains absolute control of the anesthetic.

It is alleged that dosimetric inhalers introduce an asphyxial element, and, further, that they are inapplicable for many types of operation. These statements, Buxton claims, arise from misapprehension or from lack of experience of the method. Cyanosis does not ever occur as a result of using an inhaler; when it arises it is due to preventable complications such as the faulty position of the patient, allowing fluid or other foreign material to occlude the airways or permitting the jaw to drop. Any of these possibilities may arise whatever method of giving chloroform is in use, and are so well known that any expert anesthetist will foresee and guard against them.

37. **Infection of Urinary Tract by Colon Bacillus.**—In ordinary acute cases, Thomson says, the first indication is always to ensure a free discharge of urine, usually by giving large quantities of fluid drink. If the patient refuses to drink enough, the fluid must be administered through a stomach-tube or by the rectum. The second indication is to see that the bowels move adequately. The best drug for this purpose is probably sodium phosphate, because it helps in the alkalinization of the urine. An occasional dose of calomel is also often beneficial. The other important forms of treatment are: (1) alkalinization of the urine; (2) administration of antiseptics; and (3) the use of serums and vaccines. The aim of the alkaline treatment is to render the urine alkaline, and to keep it so for a week or two after all the pus has disappeared and the signs of uneasiness have ceased. Although Thomson has generally used potassium citrate for this purpose he believes that other alkaline salts would probably prove equally efficacious if given in sufficient quantity. The dose of potassium citrate necessary varies considerably in different cases. The smallest amount which he has ever found successful in a severe case of colipyelitis was 24 gr. (1.55 gm.) in the day, in a girl aged 10 months. Generally one should begin with 60 gr. (3.88 gm.) if the patient is under 2 years old, and it will often be desirable to give double this amount. Occasionally 150 gr. (9.7 gm.) or 180 gr. (11.6 gm.) in the day has to be given before the urine becomes definitely alkaline and the temperature falls. Sometimes large doses set up diarrhea; and when this is the case the neutralizing effect on the urine is necessarily weakened. Occasionally the urine becomes alkaline within a day or two after beginning the treatment; generally in four or five days; rarely six or seven days, but never longer. The effect of the alkaline treatment is best estimated by studying the temperature charts; because, when the fever lessens, the other symptoms practically always improve.

The fact that great benefit follows the alkalinization of the urine in acute cases of *Bacillus coli* infection of the bladder, ureters and pelvis is quite established. How the treatment

effects this, however, still requires investigation. Antiseptics given by the mouth may act beneficially in two ways. In the first place they may lessen the infected state of the urine by their bactericidal action in the alimentary canal. In many cases of pyuria from *Bacillus coli* infection a dose of calomel is followed by a distinct temporary improvement. The disinfectant action of the mercury in the intestine apparently improves the state of the urine by lessening the number of bacteria which are leaking into it from the bowel from time to time. Salol, in doses of 2 to 4 grains (0.13-0.26 gm.) three or four times a day, is certainly often helpful. Thomson has found it of most use when given in addition to alkaline treatment, especially in the later stages. Urinary antiseptics, such as hexamethylenamin and its various derivatives, which act directly on the bacteria by liberating formaldehyd in urine, have proved of great value in the treatment of urinary infection by the typhoid bacillus and certain other organisms. They are, however, disappointingly ineffectual in most cases of colon bacillus infection. With the serum treatment Thomson has had no experience. Vaccines he has used in a few cases, but with disappointing results.

Practitioner, London

August, XCI, No. 2, pp. 157-360

38 Points and Pitfalls in Gynecologic Diagnosis. J. B. Hellier.
39 *Treatment of Hematemesis: A Review. O. Grünbaum.
40 Three Cases of Kidney Tumor, with Discussion of Operative Treatment of Condition. J. S. Joly.
41 Polypi. V. H. W. Wingrave.
42 Septum Nasi and Its Abnormalities. F. Muecke.
43 Peri-Sinus Abscess as Complication to Acute Middle-Ear Suppuration. J. Harper.
44 Tropical Diseases. R. T. Hewlett.
45 Workmen's Compensation Act and Practitioner. C. Rowntree.
46 Erythema Nodosum. A. H. Goose.
47 Influence of Daily Habits in Causation of Alimentary Toxemia. R. Ackerley.
48 Sepsis in Medicine. J. R. Collins.
49 Nitrous Oxid-Oxygen Anesthesia in Major Surgery. H. P. Fairlie.
50 Influence of Pancreas and Extracts Thereof on Resistance to Infection. H. R. Harrower, Chicago.

39. **Treatment of Hematemesis.**—The ideal hemostatic in these cases in Grünbaum's opinion is epinephrin. He took the drug himself experimentally and found that his blood-pressure was not raised and no detrimental signs or symptoms made themselves evident. After this, large doses were administered to patients suffering from a variety of diseases and also to normal people, and it was found that only when there was adrenal insufficiency did the blood-pressure rise. This happened with such regularity that it occurred to H. D. Rolleston and himself that this rise might be used as a diagnostic sign of adrenal insufficiency. The drug was found to be an energetic vaso-constrictor, which, however, does not lead to general rise of blood-pressure when given by the mouth, but will act locally on the injured vessel through its nerve endings. In addition to this, it is not toxic when given by the mouth, nor does it destroy tissues, and, therefore, does not delay healing. It acts in very dilute solution. For these reasons its action approaches that of the ideal drug. It possesses one disadvantage, namely, it is followed by a reaction; there seems to be dilatation after its action is over. To meet this, small doses must be given at short intervals for a considerable period. Administration three or four times a day is useless; it must be given at short intervals, the longest being an hour, if the reaction is to be avoided and the full benefit of the drug attained.

If epinephrin solution, one part in a thousand, administered in dram doses along with grain doses of neutral calcium chlorid does not lead to the cessation of hemorrhage, further treatment must be considered; among these methods are the lowering of blood-pressure; the administration of normal horse-serum; surgical. Two minims of the tincture of aconite may be administered every half hour, until the heart beat becomes slower than sixty to the minute, or the pressure falls below 90 mm. Hg, or the heart becomes very irregular. In most cases the fall in pressure is rapid. The method of administration must depend on the condition of the patient. It is quite obvious that if the stomach is full of blood it would be futile to place two minims of tincture of aconite in it; on the other hand, hypodermic injection of aconite is very painful, because it stimulates the sensory nerves before it paralyzes them. In any case, tincture could not be used hypodermically, but a dilute solution of aconitin in slightly alkaline normal saline. Occasionally, the tincture of aconite may be added to the saline enemas.

As for horse-serum, Grünbaum claims that the rationale of its action in arresting hemorrhage and healing a gastric ulcer is not satisfying. Physiologic, as well as physical, rest should be aimed at. For the first three or four days, the stomach should be kept empty, and water supplied to the patient in the form of saline rectal enemas. Even the introduction of water into the rectum may lead to a certain amount of movement of the intestine, and possibly of the stomach, but it does not, as far as is known, cause any secretion of hydrochloric acid in the stomach. Water given by the mouth may lead to secretion of hydrochloric acid by the gastric mucosa, and this would tend to dissolve the clot which is acting as a stopper for the ulcerated vessel. Later, when food is given, it should contain alkali and proteid to combine with any acid secreted. Grünbaum is convinced that nutrient enemas in certain cases in which food cannot be given by the mouth for a very considerable time may supply a certain amount of energy.

This is an outline of the treatment of hematemesis when due to acute gastric ulcer. If there is a history of previous attacks of hematemesis, and there is little doubt that it is a chronic ulcer, Grünbaum says the advisability of operation must be considered. It must be remembered that, in all probability, operation will have to be resorted to in the end, and the increased risk of carrying out the operation when the patient has lost blood, and possibly the mouth is in a condition in which operation is not especially favorable, has to be balanced against the risk of the patient dying from hemorrhage. It is not possible to lay down any definite rule; every case has to be considered in detail.

When the hemorrhage is due to some of the other causes, such as duodenal ulcer, the greater part, if not all, of the blood is passed by the bowel. The treatment is in many respects similar to that of gastric ulcer. In malignant ulceration of the stomach, the treatment should be similar to that of chronic ulcer. In cases of hemorrhage due to cirrhosis of the liver, surgical treatment is of no avail, and the administration of hemostatics is useless. An attempt may be made to lower the general blood-pressure, and to increase the coagulability of the blood. Dilatation of the blood-vessels of the liver is indicated, but whether that is brought about by counter irritation of the hepatic region, by means of mustard plasters and the like, is doubtful. The treatment of rupture of an aneurysm into the stomach or esophagus is beyond the medical man. Rupture of an esophageal vein simulates gastric ulcer and is usually diagnosed at operation or post mortem.

Annales de l'Institut Pasteur, Paris

June, XXVII, No. 6, pp. 421-500

51 Trypanosomes and Leukocytozoon Found in Birds in the Congo. J. Kerandel.
52 Research on the Aspergillus Niger. (L'amygdalase et l'amygdalinase chez l'A. niger et quelques hyphomycètes voisins.) M. Javillier and H. Tchernoroutsky. (Changements morphologiques de l'A. niger en présence de divers acides et sels acides.) A. Kiesel.
53 The Persian Miana Bug and Spirochetes. (Argas et spirochètes. Granules de Leishman.) E. Marchoux and L. Couvy.
54 Gummatous Tumors in New-Born Infant with Numerous Spirochetes. C. Sauvage and L. Géry.

Revue de Chirurgie, Paris

August, XXXIII, No. 8, pp. 173-344

55 *Old Fracture of the Patella. (Revue sur le traitement des fractures anciennes de la rotule.) E. Quénu and J. Gatellier.
56 *Operative Treatment of Pulmonary Tuberculosis. P. Gorse and A. Dupuich.
57 Operative Treatment of Chronic Splenomegaly with Cirrhosis of the Liver and Ascites. (Splénomégalies chroniques splénothrombosiques.) I. Tansini and G. Morone.

55. **Old Fracture of the Patella.**—The details of seventy-eight out of 134 cases are tabulated for comparison of the outcome of different operative procedures in treatment of old fracture of the patella. Even before 1893 the ultimate results were very encouraging, good functional outcome being reported in 72.4 per cent. and 5.2 per cent. with partial use of the joint. Since that date the outcome has been much better, fully 80 per cent. having an extremely satisfactory use of the limb and fairly good in 17 per cent. of the others. Of all the methods that have been applied, the autoplastic technic, utilizing the quadriceps muscle itself, has proved most effectual. Ferraresi described it in 1902; the Murphy, Rotter and Turner technics are practically the same.

56. **Operative Treatment of Pulmonary Tuberculosis.**—Freund's chondrotomy seems to have been abandoned as no reports of its application have been published since 1910. Resection of ribs to mobilize the chest wall is generally regarded as the last operative resort when conditions prevent artificial pneumothorax. The details of 301 cases of the latter are tabulated, with recovery in forty-seven and great improvement in seventy-two. A complete failure was realized in only twenty-five; the procedure can be incriminated for the death of three patients, and thirty-one died from the progress of the disease.

Beiträge zur klinischen Chirurgie, Tübingen

July, LXXXV, No. 2, pp. 239-520

58 *Clinical and Experimental Study of Acute Necrosis of the Pancreas. H. Seidel.
59 Fat for Filling Cavities in Bones. (Zur Plombierung von Knochenhöhlen mit frei transplantiertem Fett.) M. Krabbel.
60 *Tests of Functional Capacity of the Kidneys. (Zur funktionellen Nierendiagnostik.) R. Bromberg.
61 Cancer of the Ethmoid Bone. (Endothelium des Siebbeins.) W. Jerchel.
62 Operative Treatment of Flat-Foot. (Resultate der Ernst Müller'schen Plattfussoperation.) E. Müller.
63 Influence of Operations on the Bones of the Foot on the Later Growth and Functioning of the Foot. O. Hahn.
64 *Relations between Chronic Inflammation and Ulceration in the Stomach and Gastric Cancer. (Beziehungen der chronischen Gastritis mit ihren Folgezuständen und des chronischen Magengeschwürs zur Entwicklung des Magenkrebses.) G. S. Konjetzny.

58. **Acute Hemorrhagic Necrosis of the Pancreas.**—Seidel devotes 161 pages to a detailed description of his ten clinical cases and extensive experiments on several dozens of dogs, comparing his results with those of others and adding four pages of bibliographic references. The trouble seems to be the result of activation of the trypsin ferment inside the gland. This activation occurs by way of the pancreatic duct from the action of bacteria or bile or both together, or of enterokinase or of trypsin already activated in the duodenum. Exceptionally, the activation may be the work of bacteria arriving by way of the blood or lymph, or there may be embolism and thrombosis. But under all circumstances, the direct causal agent is the activated trypsin, its action on the parenchyma causing the changes typical of acute necrosis of the pancreas.

60. **Tests of Functional Capacity of the Kidneys.**—Bromberg thinks that the electric conductibility of the urine from each kidney gives the most reliable information in regard to the functional capacity of each, and he gives an illustrated description of the apparatus which he has devised for testing the electric conductibility and commends as simple and accurate. He gives a few examples in which a number of the usual tests were applied and the findings compared. Many of them conflicted with each other but the course of the cases in all confirmed the findings of the electric tests.

64. **Relation between Chronic Inflammation and Ulceration of the Stomach and Gastric Cancer.**—Konjetzny gives an illustrated account of a case of multiple multicentric cancer developing in the stomach on a basis of chronic inflammation and polyps. In another case the stomach contained several cancer foci, this multicentric carcinosis having evidently developed on an adenomatous polypous hyperplasia of the mucosa, the transitional phases being apparent at many points. Other cases showing cancerous degeneration of a chronic hard ulcer are illustrated also, while in other cases a secondary ulcer had developed in a stomach already the seat of malignant disease. Without careful microscopic examination it may often be impossible to say whether the ulcer or the cancer is secondary in such cases. In any event, the data presented emphasize anew the extreme importance of inflammatory conditions in the stomach mucosa for the development of gastric cancer. Most dangerous apparently in this respect is the polypous proliferation of the mucosa resulting from chronic gastritis. He thinks that about 10 per cent. of gastric cancers probably develop from an ulcer.

Beiträge zur Klinik der Tuberkulose, Würzburg

XXVII, No. 3, pp. 291-518. Last indexed Aug. 16, p. 516

65 *Premenstrual Rise in Temperature. (Ueber prämenstruelle Temperatursteigerungen.) T. B. Hansen.
66 *Indications for Compressive Treatment of the Lung or Exercising It. (Wann Ruhigstellung der Lungen, wann Bewegung?) E. Kuhn.
67 Relative Value of Living and Dead Tubercle Bacilli and of Their Endotoxins in Solution in Active Immunization against Tuberculosis. K. v. Ruck (Asheville, N. C.).
68 Tuberculin Treatment of Tuberculosis. (Zur Tuberkulinfrage.) G. Schröder.
69 Importance of Bovine Tubercle Bacilli for Tuberculosis in Children. (Zur Frage der Bedeutung der Perlsuchtbazillen für die Tuberkulose des Kindes.) H. Delst.

65. **The Menstrual Temperature Curve.**—Hansen reports extensive research to determine the fluctuations in temperature connected with menstruation and pregnancy. He gives three 5-page charts to show the typical temperature curves. Before puberty and after the menopause the temperature runs on a constant level, as in men, with very slight fluctuations, but menstruation brings a temperature wave rising high just before the menses and falling below normal afterward, beginning to rise again about two weeks before the date of the following menstruation. The premenstrual rise in temperature starts to decline one or two days before the onset of the menses. The type in all the women was alike. Hansen compares his findings with those of others and emphasizes their importance. Conditions are liable to mislead in the estimation of the temperature in disease unless the physiologic fluctuations in the temperature are known and allowance made for them. He theorizes to explain the causes for the fluctuations, attributing to exaggeration of metabolism of albumin the rise of temperature observed. It occurs under conditions requiring an increase in the vital processes, as in pregnancy and lactation. One special point which he emphasizes is that during the first third of pregnancy, the temperature is of the high premenstrual type; it falls later and is more of the postmenstrual subnormal type during the last half of pregnancy, with no monthly periodical fluctuations. Another point is that during periods of increased metabolism the interval of metabolic rest—from midnight to early morning—is abbreviated, so that the temperature at 6 a. m., for example, is as high as considerably later in the day under other conditions. And yet the minimal temperature may have persisted the same.

66. **When Should the Lungs be Treated by Compression and When by Exercise?**—Kuhn reiterates that with pulmonary tuberculosis the lung should either be kept entirely at rest or kept actively movable. Any half-way state between active movement and complete collapse is not only irrational but actually promotes the proliferation of the tubercle bacilli. The lung should either be squeezed tight or it should be exercised and trained to the utmost possible expanding power. There is no middle ground between these extremes. The induced pneumothorax answers the first indication when conditions permit. He defines the indications for compression as extensive processes, especially those with a cavity, in all those cases in which the temperature cannot be kept normal under repose or slight exercise. This applies even in the less advanced cases in which bed rest and respiratory exercises send the temperature up a little or it rises spontaneously on slight exercise even after prolonged repose. On the other hand, the active exercise treatment of the lungs is indicated

in all the (not too advanced) cases which do not show permanent fever and in which under cautious breathing exercises the chest can be mobilized and enlarged while the temperature keeps persistently at normal. The exercise treatment is contra-indicated with all acute inflammatory processes, especially large cavities, and in all cases with persisting fever, even in the earliest stages. By far the best means to mobilize, exercise and train the lung, he says, is with the aspiration mask. This permits graduated exercises, carefully adapted to the condition at the time, and it also permits auto-inoculation, to use Wright's expression for forcing into the circulation toxins from the focus in the lungs. With the aspiration mask this is done in a rational manner, he says, under constant control. Freund's chondrotomy, dividing the costal cartilage to mobilize the chest wall, does this in a sudden violent way, entailing traction on the parts, including the focus, and it is thus more or less dangerous. Kuhn gives a number of illustrations to show the symmetrical enlargement of the chest and expansion of the lung under systematic exercises with the aspiration mask. (It was described in THE JOURNAL, 1913, LX, 632 and 768.)

He gives microscopic findings which show that in the collapsed lung the larger blood-vessels are still filled with blood, especially the bronchial arteries, thus supplying nourishment for the lungs and permitting the bactericidal action of the blood on the bacilli. The lymph supply is shut off more completely, and hence auto-inoculation is rendered impossible. He thinks that the exercising of the lung with the aspiration mask, or similar valve device to impede the intake of air, has a decided influence in prophylaxis by increasing the vital capacity. He knows of instances in which the mask has been used by young people for years, off and on, and the shape of the chest and its excursions have been favorably modified to an astonishing extent.

Berliner klinische Wochenschrift

August 4, L, No. 31, pp. 1421-1464

70 *Splenomegaly. (Fall von Splenomegalie.) F. Kraus.
71 *Cardiovascular Symptoms and Their Treatment in Diabetic Coma and the Stage Preceding. R. Ehrmann.
72 Experimental Transmission of Tumor Cells. (Experimentelle Uebertragung von Geschwulstzellen.) F. W. Strauch.
73 *Treatment of the Severest Forms of Ataxia in Tabes. Frenkel (Heiden).
74 Roentgenotherapy of Bone and Joint Tuberculosis. (Zur Anwendung des Röntgenlichtes bei der Knochen- und Gelenktuberkulose.) E. A. Oppenheim.
75 Heliotherapy of Tuberculosis. (Zur Sonnen- und Luftbehandlung der chirurgischen Tuberkulose.) P. Glaessner. (Heliotherapie der Tuberkulose in der Grossstadt.) L. Alkan.
76 Urine Test for Cancer. (Ueber die klinische Bedeutung der Bestimmung des Kolloidalstickstoffes im Harn nach der Methode von Salkowski und Kojo zur Diagnostizierung des Carcinoms der inneren Organe.) W. P. Semenow.
77 Simple Quantitative Test for Albumin in Urine. (Quantitative Eiweissbestimmungen im Urin für den praktischen Arzt.) M. Claudius.
78 Origin of Amniotic Fluid. (Herkunft des Amnioswassers.) B. Wolff.

70. **Splenomegaly.**—Kraus' patient was a Russian merchant of 62 who for three months had suffered from headache and pains in the limbs, gastric disturbances, anemia, somnolency and depression, and subfebrile temperature; cardiac dyspnea gradually developed, with anasarca at times, and the spleen increased in size until the longest diameter was about 43 cm. The blood findings were those of an aleukemic myeloid leukemia, with suggestion of pernicious anemia, the total leukocytes not above normal, but the number of myelocytes markedly increased, as also of the young forms of the polymorphonuclear cells, while the polymorphonuclears were reduced in numbers. The patient came to Kraus to have his spleen taken out, but Kraus regards splenectomy as very dangerous in leukemia, and he applied merely radiotherapy and benzol. The patient has improved notably under this treatment and the spleen measures now only 30 cm. A peculiar finding in this case was the discovery of cells in the blood which had every appearance of being endothelial cells. Plesch and Lippmann found similar endothelial cells in the pleural effusion of animals rendered experimentally aleukocytic.

Kraus reiterates in conclusion that myeloid leukemia *(Myelose)* can develop either acute or chronic; with mixed cells or myeloblasts; with or without anemia; with increased numbers of the white cells (numerically leukemic) or with subnormal numbers of white cells (aleukemic), and as a diffuse or more isolated affection of the bone marrow, or splenomegaly. There is no longer any excuse for confusing the splenomegaly of leukemia with the splenomegaly of Banti's disease. The latter is benefited by splenectomy but it is directly dangerous in the bone-marrow disease; death has followed in some instances.

71. **Importance of Cardiovascular Symptoms in Diabetic Coma and Its Preceding Stage.**—Ehrmann calls attention anew to his recent statements that diabetic coma is long preceded by a characteristic drop in the blood-pressure due to the toxic action on the cardiovascular system of the beta-oxybutyric acid and the acetic acid. The patient dies in the coma not from sudden heart failure, but from the cumulative toxic action of the butyric acids. He further presents evidence to prove that the beneficial effect of large doses of an alkali in diabetic coma is not due to saturation of the acids but to the fact that the elimination of the toxic acids is materially promoted by the alkali. The ferric chlorid urine test may be negative even in incipient coma, but after administration of the alkali the reaction becomes positive. The patient is in greater danger, the less the response to the ferric chlorid test applied to the urine.

Long before the coma develops, the toxic action of the butyric acids can be detected by watching over the cardiovascular system and, if it shows signs of weakness, coma can be warded off by keeping it up to par with the proper drugs. He insists that just as sodium bicarbonate must be pushed until the urine becomes alkaline or, rather, until the ferric chlorid test elicits the most intensive response, the tonics for the cardiovascular system must be pushed in the same way. He gives the details of eleven cases in which by keeping the cardiovascular system under control he was able to avert impending coma by subcutaneous injection of camphor or caffein or some preparation of digitalis by the mouth. One patient has been in this stage of precoma for two years. This is a man of 42 and he frequently had what Ehrmann calls the "precoma expression," resembling the sleepy phase which follows after an epileptic seizure. The blood-pressure was 140 or 150 mm. After a few months there was a slight attack of coma; then the respiration became deep and slow, twenty to the minute; the eyeballs were soft; the blood-pressure only 100. Subcutaneous injection of camphor tided the patient past the danger point, and full earning capacity was soon restored although he still occasionally has periods of deep costal breathing.

In cases of permanently low blood-pressure, Ehrmann has given caffein sodiobenzoate, 7:200, in daily doses of from three to six tablespoonfuls over long periods without any unfavorable action on the stomach. He prefers this preparation of caffein to the sodiosalicylate, as it does not affect the ferric chlorid test in the urine, like the salicylate. He also advises such patients to drink strong coffee or tea daily. Caffein has further a stimulating effect on the diuresis, independently of the blood-pressure. Together with the caffein, or alone, digitalis may be needed. After the coma has once developed, measures to act on the cardiovascular system may come too late.

73. **Treatment of the Severest Forms of Ataxia in Tabes.**—Frenkel here gives the principles of his method of reeducating the muscles in locomotor ataxia, with the modifications for individual cases. (THE JOURNAL has recently summarized some discussions of this principle of analytic compensatory exercises in reeducation of the motor system, as, for example, 1913, LX, 252, 634 and 927.) Frenkel insists that with uncomplicated tabes complete success depends merely on whether the patient is able to devote the necessary time to the course of exercises. With even a small amount of muscle sensibility, the patient can learn to walk in the exercise room with his eyes shut. But this may take a year or longer; even at the best, weeks must pass before the patient has learned

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to take the first independent step. The dangerous atony of the bladder and intestine is checked by the exercises keeping the abdominal musculature in healthy action. Severe catarrhal affections of the bladder are extremely rare in patients taking the exercises. The great trouble is the length of the course required. The expense in a private sanatorium is often prohibitive, and public institutions are more to relieve acute sickness. The finest results Frenkel has ever witnessed from the exercises in the severer forms of ataxia were at the Salpêtrière at Paris, which is, to a certain extent, an institution for incurables. A person once admitted to this department cannot be discharged against his will. Frenkel knew of one patient who had been completely cured of the severest form of locomotor ataxia and could walk independently and climb into an omnibus, but he refused to leave and he also refused to do any work in the institution. In Germany the sick benefit societies refuse to pay for such courses for their policy-holders, probably because of the failure of courses as given in the public hospitals, owing to the lack of trained skill or to the shortness of the period of training. Frenkel adds that there are no contra-indications to the exercise treatment properly applied, but he warns explicitly against combining this treatment with a course of baths. Balneotherapy with or following the exercises frequently leads to slight paresis of the muscles of the legs which in a few weeks may develop into total paralysis.

Deutsche medizinische Wochenschrift, Berlin

July 31, XXXIX, No. 31, pp. 1489-1528

79 *Subphrenic Abscess. G. Ledderhose.
80 Pathologic Importance for the Eye of the Tissue Juices. (Die Bedeutung des Anaphylatoxins und des art- und körpereigenen Gewebssaftes für die Pathologie, speziell die des Auges.) H. Dold and A. Rados.
81 Venous Pulse and the Heart Sounds. (Venenpuls und Herztöne.) R. Ohm.
82 Comparison of Axilla and Rectum Temperature after Long March. A. Lippmann.
83 *Diagnosis of Incipient Apical Tuberculosis. G. Richter.
84 Tetany with Perforation-Peritonitis. A. Holterdorf.
85 *Perineal Suppuration in a Typhoid-Bacillus Carrier. L. Levy.
86 Pseudomyxomatous Cysts in Appendix. C. Hamnesfahr.
87 Diffuse Adenomatous Polyposis. G. Scagliosi.
88 Fascia Flaps. (Experimentelle Untersuchungen zur freien Faszientransplantation.) B. Valentin.
89 Treatment of Rachitis with Cod-Liver Oil, Lime and Phosphorus on Basis of Metabolic Findings. (Zur Behandlung der Rachitis mit Lebertran, Kalk und Phosphor auf Grund von Stoffwechselversuchen.) E. Schloss.
90 Roentgenotherapy of Superficial Lesions. (Moderne Röntgentherapie mit bes. Berücksichtigung der Oberflächentherapie.) F. M. Meyer.

79. **Subphrenic Abscess.**—Ledderhose says that a just preceding appendicitis or liver trouble may give the clue when there are no local subjective or objective signs of the abscess, but merely that the general condition does not improve as rapidly as anticipated and fever drags along after the primary affection is supposedly conquered. Only rarely is the subphrenic abscess ushered in with a chill, high fever and pain. In the subacute cases there may be pain in the intercostal spaces or below the costal arch; the side involved does not share in the breathing excursions as much as usual. Percussion reveals a zone of relative dulness which in front has a cupola-like outline. The liver seems to be pushed down, the heart up. Accumulation of gas in the region is revealed by resonance between the lung and liver, changing its location as the patient changes position. Roentgenoscopy shows the diaphragm abnormally high, and reveals accumulation of gas, but if the pleura is involved the roentgenoscopic findings may be misleading. If exploratory puncture brings pus, the indications for operative treatment are given at once. By introducing and withdrawing the cannula very slowly, there is less danger of missing the abscess; it may be necessary to puncture at several points before the pus is discovered. He is confident that if the space just below the diaphragm is examined more as a routine measure, the findings will clear up many puzzling cases and permit effectual treatment. He reports several cases from his own experience in which the subphrenic abscess developed after operative treatment of perforation of a gastric or duodenal ulcer. In the majority of cases the appendix was the primary seat of trouble. In differentiating subphrenic abscess, empyema, pyopneumothorax, pulmonary and liver abscess and liver echinococcus cyst are the affections which have to be excluded.

83. **Diagnosis of Incipient Apical Tuberculosis.**—Richter complains that general practitioners as a rule fail to utilize to the utmost the progress which recent years have brought in the diagnosis of apical processes. He cites Pel's remark that certain physicians percuss and auscultate apical tuberculosis in nearly every patient that comes their way, and, what is worse, give them treatment to correspond. Richter deplores in particular the neglect of the aid possible with Krönig's method of extremely light percussion over the apices, outlining with a pencil the findings for comparison. Percussion is generally applied too hard. The finger or plessimeter should just rest on the skin, not press on it. This is especially important in percussing toward the side. Fixation of the free margin of the lung, not only of the lower margin, may be the earliest sign of a tuberculous process in the lung. Krönig has often found this lack of movability of the free margins as the earliest sign confirming the suspicion of tuberculosis suggested by the general condition. The induration of the apex which develops in consequence of impeded breathing through the nose is not yet fully understood and differentiated by general practitioners, as a rule; far too often it is erroneously assumed to be a tuberculous process. Richter describes a typical example of this "collapse induration of the apex"; a man of 25, a great smoker, had had part of the turbinate bones resected six years before, but the mucosa was still so hypertrophied that the lumen was almost closed on one side. During the winter he had had a protracted bronchitis and then mild influenza with slight fever. Examination after recovery showed infiltration with catarrh of the right apex and there was a little sputum each morning, but the man felt entirely well and the sputum contained no tubercle bacilli. The appetite was good, the pulse normal, and there was no loss in weight but the resonance of the right apex was impaired and the Krönig field of resonance restricted. The margins of the lungs were movable below on both sides. Auscultation showed a little rough vesicular breathing at the right apex with scanty dry murmurs, but the temperature was constantly normal and the breathing pure. If the physician had not known of the old history of impeded nasal breathing in this case, the diagnosis of apical tuberculosis would have been almost certain.

An unusually low, enlarged thyroid may cast a misleading shadow, and Richter emphasizes the necessity for study of the finished roentgenogram instead of trusting merely to the screen. Kreuzfeld's cough phenomenon, namely, the lightening up of the shadow of the apex as the individual coughs, which occurs constantly in health, is conspicuously absent in case of a tuberculous process in the apex. This finding alone, Richter thinks, justifies the necessity for the use of the Roentgen rays in differentiation of dubious pulmonary processes.

85. **Typhoid Bacilli Carriers.**—Levy discusses the case of a miner who had typhoid at the age of 15 and has been under observation for the last seven years as a chronic "carrier," constantly discharging typhoid bacilli in the urine. Last year an abscess developed in the perineal region which contained typhoid bacilli in pure culture. Of the forty-one bacilli carriers in the Metz region known to the authorities during the last ten years, two were the source of infection of others in five separate years; four in four years; ten in three years; nine in one year and only thirteen had escaped infecting others. The miner whose case is reported had caused infection of others in five out of the seven years he had been a carrier, and two others in four out of seven years. The danger of infection of others increases as the carrier lives and works with larger numbers of persons and in places where sanitary conditions are more rudimentary. Carriers with access to water-closets and accustomed to cleanly habits are far less dangerous than miners and others living in unhygienic environments. If the employers are informed that the man is a dangerous carrier, this means merely that they will dismiss him and he will seek work where he is not known, keeping

secret his bacilli-scattering propensity. The only solution for the problem of these unhygienic chronic bacilli carriers, Levy thinks, is to provide some means for their work and support with as little infringement on their liberty as possible, but still making it impossible for them to infect others. As the dangerous scatterers are mostly working people, the question of their maintenance would not be very serious if only some small fund for the purpose was available. By providing for the hygienic welfare of the carriers, the harvest of disease and death they are now sowing will die out from lack of seed.

Medizinische Klinik, Berlin

August 3, IX, No. 31, pp. 1233-1276

91 *Alcohol in Infectious Diseases. C. A. Ewald.
92 *Diuresis. L. Hess.
93 Chondroma in Shoulder-Joint Capsule. (Gelenkkapselchondrom des Schultergelenks.) R. Hagemann.
94 Mineral Waters in Treatment of Habitual Constipation. M. Rheinboldt.
95 Direct Medication, etc., of the Duodenum. (Ueber Duodenaltherapie. F. Rosenberger.
96 *Eucalyptus Oil in Scarlet Fever and Measles. (Zur Eucalyptusfrage bei Scharlach und Masern.) J. Elgart.
97 Action of Mercury and Salvarsan on the Circulation of the Blood in the Isolated Pancreas of the Rabbit. (Quecksilber und Salvarsan in ihrer Wirkung auf die Blutströmung nach mikroskopischen Beobachtungen am lebenden Tier.) G. Ricker and R. Foelsche.

91. **Alcohol in Infectious Diseases.**—Ewald is not a teetotaler yet he has dropped the use of alcohol almost entirely in his medical service and practice, regarding it as absolutely useless in acute and chronic infectious diseases from the standpoint of reducing the temperature or destroying the bacteria or as a hypnotic. Alcohol does not increase the resisting power of the blood but rather reduces it; habitual users of alcohol are attacked by infectious disease just as often and just as severely as those who do not use alcohol, and they prove less resistant than the latter. The use of alcohol as a food is futile in a single dose, and the continued use is directly harmful. As a stomachic, alcohol can be entirely dispensed with; much better results can be obtained from hydrochloric acid and pepsin in proper doses or infusions of condurango, etc. In chronic tuberculosis, egg-nogs and alcoholic drinks breed gastric catarrh and reduce the patient's power of digestion and assimilation instead of promoting it. In severe collapse, toxic or mechanical or from loss of blood, the stimulating effect of alcohol may prove useful, especially as alcohol is practically always accessible in convenient form, but the success of the "temperance hospitals," where not a drop of alcohol is allowed, shows that camphor, strychnin, caffein, etc., in fact answer the purpose equally well if not better. He cites some experimental research and statistics, including some from a large Leipsic sick benefit society which show that pneumonia occurred ten times as often among hard drinkers as among the other policy-holders and was fatal in a like proportion. Articular rheumatism and other infectious diseases occurred nearly twice as often; and some English statistics show nearly twice as many cancers among drinkers as among the non-drinkers. At the same time, Ewald thinks that a judicious use of alcohol to give flavor to a meal is sometimes advisable, particularly in chronic diseases, the benefit from the appetizing, stimulating influence outweighing the deleterious consequences. But even here, he warns, the use of alcohol in this way should not be allowed to become a habit but should be only occasionally permitted.

92. **Diuresis.** — Hess discusses the functional relations between the kidneys and other organs which are much more numerous and important than was ever surmised until comparatively lately. It is easy to detect a tendency to dropsy long before there is any edema if we make a practice of weighing every week our patients known to have impaired heart or kidneys. An increased weight indicates retention of water and by keeping the patient in bed a few days the weight drops by several pounds as profuse diuresis sets in. Widal had a patient who had retention of water in this way without edema to a total of 13.2 pounds. The tolerance for retained water varies within wide limits during this ante-dropsy stage. The diuretics of the purin series, including caffein, act by enlarging the renal artery and thus promoting the blood-supply to the kidney, while at the same time reabsorption of water in the tubules is reduced. It is not necessary to give the drugs in large doses; small doses answer the purpose still better, suspending the drug occasionally for a day or two. The effect is greatest in the parenchymatous and tubular form of kidney disease and least when the vascular part of the kidney is involved. The effect of the diuretic depends naturally on the heart's being functionally capable; stimulation of the heart action may induce diuresis without further measures. Digitalis has a direct diuretic action from its effect on the renal arteries, even in doses far too small to act on the heart itself. The heart tonics and the diuretics may be combined, but there should be ample intervals to avoid fatiguing the diseased epithelium. Abnormally high arterial pressure may be due to contraction of the peripheral vessels alone, or the contraction may affect mainly the splanchnic vessels, the toxic contraction being the result of accumulation of acids. In this "high pressure stasis," a heart tonic, alone or in combination with caffein, may induce profuse diuresis as the heart action improves.

Restriction of salt is useful only when the kidney is unable to eliminate the salt, but restriction of fluids may be beneficial when either the heart or kidney or both are involved in producing the tendency to dropsy. Von Noorden keeps the average intake of fluids down to 1,500 or 2,000 c.c. a day in chronic nephritis, only at rare intervals permitting the patient to drink more copiously. The advantage of thus reducing the work of the heart is obvious, especially in prophylaxis of dropsy. Hess does not keep kidney patients on a milk diet as he regards this as undernourishment, while the milk contains too much salt. Only when the patients with edema are particularly robust, well nourished or corpulent, he follows the Karell diet. The best results with this are attained in the cases in which the dropsy is due to a combination of kidney trouble with arteriosclerotic and myocarditic processes. Karell allows the patient nothing but 200 c.c. of boiled milk four times a day for five or seven days, at 8, 12, 4 and 8, keeping him in bed all the time. Then he allows also one egg a day, at 10 a. m., and later a little zwieback, returning to the ordinary diet the twelfth day after commencing the course, but not allowing more than 800 c.c. of fluid a day for two or four weeks. By the third day there is generally abundant diuresis and great subjective relief without the use of drugs. Drugs afterward also are much more effectual.

96. **Prophylaxis and Treatment of Scarlet Fever and Measles.**—Elgart has been applying eucalyptus oil according to Milne's directions in prophylaxis of scarlet fever and measles. But he did not smear the whole body with it, as Milne does, but had the children wear a bag kept soaked with the oil, thus inhaling the fumes constantly and disseminating the fumes through the room. Milne is house physician at the Barnado homes for boys, and during his thirty years of service over 12,000 boy inmates have passed through his hands. There were 245 cases of scarlet fever and 234 of measles, all imported from without and none starting an epidemic although the children were not isolated but merely smeared from head to heel with the eucalyptus oil twice a day for the first four days and then once a day for six days, while the tonsils were swabbed with 10 per cent. phenol in oil, at first every two hours the first day and then at longer intervals. The swab used was always the size of the patient's thumb. Elgart prefers inhalation of a 30 or 50 per cent. solution of lime (Aq. calcis) to sterilize the throat, instead of the phenol, and has found it equally effective, but he makes a point of having every one coming in contact with the patients or exposed to infection in any way use the inhalations also, and likewise wear the eucalyptus oil amulets. In one ward with seven children, one developed scarlet fever and was isolated; the other children for four weeks were made to inhale the 50 per cent. solution of lime twice a day at first and later once a day and wear the eucalyptus oil bags and none developed scarlet fever. He remarks that the development of the scarlet fever in a child who had been in the (new) hospital for four weeks suggests that ordinary sore

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throat cocci may have acquired exceptional virulence for some reason and thus set up the scarlet fever. Milne's technic is based on the assumption that the eucalyptus oil sterilizes the desquamating skin, but Elgart thinks that this is unnecessary if only the receptive organs of the persons liable to become infected are kept sterilized, and he thinks that this is accomplished by keeping the air of the room saturated with the fumes of the eucalyptus oil on the neck bags, supplemented by direct sterilization of the throat, keeping up these measures for six weeks.

His experience confirms further that the eucalyptus oil neck bags are effectual also in prophylaxis of measles; no further cases developed in a ward with eighteen children after two coming down with measles had been isolated and the others kept supplied with the oil amulets. The isolation was maintained only while the bronchitis lasted, about two weeks. Scarcely any of his scarlet fever patients inhaling the solution of lime systematically developed complications, and they were extremely mild and brief. He is convinced that his success sustains his assumption that the acute infectious diseases are spread by inhalation, and that by keeping the inhaling organs of all exposed constantly sterilized with the eucalyptus fumes, the lime water or other effectual disinfectant, the spread of the infection can be prevented, the disease attenuated and the course shortened.

Münchener medizinische Wochenschrift

August 5, LX, No. 31, pp. 1697-1752

98 Technic for Radiotherapy of Cancer. (Karzinombestrahlung.) E. Bumm and H. Voigts.
99 *Hypertrophy of the Prostate. (Wandlungen in der Lehre der Prostatahypertrophie.) Kielleuthner.
100 Sources of Error in Serodiagnosis: Influence of Blood Content of an Organ. (Zur Kenntnis der Fehlerquellen des Dialyseverfahrens bei serologischen Untersuchungen.) E. Abderhalden and A. Weil.
101 Combined Treatment of Inoperable Uterine Cancer. (Beeinflussung des inoperablen Uteruskarzinoms mit Strahlen- und intravenöser Chemotherapie.) R. Klotz.
102 Improved Tecnic for Gastrostomy. (Eine neue Gastrostomiemethode.) H. H. Janeway (New York).
103 Malformation of Male Genitals. (Einige interessante Missbildungen der männlichen Generationsorgane.) A. Ansprenger.
104 *Metastatic Eruptions in Infectious Diseases. (Beitrag zur Kenntnis der Pyämide.) Werther.
105 *Tuberculin Treatment for Outpatients. Hartmann.
106 *Death after Salvarsan. (Ein merkwürdiger Todesfall nach Salvarsan. J. Krol.
107 *Protection for the Hands in Septic Operations. (Einfacher Handschutz bei eitrigen Operationen.) A. Brüning.

99. **Changes in the Conception and Treatment of Enlarged Prostate.**—The illustration given of a transverse section of the pelvis with an enlarged prostate, photographed from a frozen section without retouching, supplements the illustrations given in THE JOURNAL July 6, 1912, page 8, confirming anew that the prostate proper does not share in the hypertrophy. Kielleuthner reiterates that the prostate proper is squeezed flat and thus forms a sort of capsule around the enlarged adenomatous mass, so that the latter can be shelled out without injury to the prostate proper or the genital organs. This explains why the genital functioning is not affected by the "prostatectomy" if it is done from above, merely lifting out the adenomatous mass and leaving all the parts and organs below intact. Suprapubic prostatectomy is thus a conservative operation as it leaves the prostate, while it is radical as it removes all that is causing trouble and leaves no chance for recurrence. He comments particularly on the great advantage of being able to estimate the functional capacity of the kidneys before the operation, saying that for this we have a number of means at our command, the best, perhaps, being the sulphonephthalein test. This is particularly convenient and reliable as it does not depend on subjective impressions as much as other tests.

He reduces the danger of the operation by doing it at two sittings, first making the opening into the bladder and waiting for the astonishing improvement which almost invariably follows when a free outlet for the urine is thus provided. The operation on the prostate then becomes practically free from danger. Recent reports show that the mortality from prostatectomy has dropped from 22 to 10, 8 or 4 per cent. When the adenomatous mass has been shelled out, Freyer prevents bleeding by flushing the region with very hot salt solution; the same effect can be realized with an ice-cold solution. Severe hemorrhage is combatted by tamponing, packing the entire bladder with gauze if need be. General anesthesia should be avoided when possible; with much debility Kielleuthner employs only regional anesthesia with direct anesthetization of the mucosa. He gets the patient up the third or fourth day.

104. **Pyemids.**—Werther uses Merk's term for the metastatic skin affections which develop in the course of infectious diseases. The pyemids range from mere erythema to pustules, ulcers and necrotic processes. He reviews the literature on the subject and reports four cases all of one type, a hemorrhagic erythema affecting mostly the face and fingers. In one case the pyemia dated from an abortion a year before; in the second case from a septic sore throat first noted nine weeks before. In the third case there was double infection, with tubercle bacilli and the *Streptococcus viridans*. The fourth patient was the only one that recovered; the dermatitis in this case was evidently connected with nephritis, bronchitis and a sinusitis, and it subsided after the sinus had been evacuated; healing was delayed by intercurrent erysipelas. The whole sickness lasted six months. These four patients were women between 18 and 41. In another case the exanthem followed a streptococcus sore throat and involved the whole body; during life the cocci could be cultivated from the blood. In another case the erythema resembled chronic erysipelas; it developed after twelve weeks of nephritis, bronchitis and myocarditis with high intermittent fever. The patient succumbed to suppurative meningitis. The whole trouble probably originated in an old ulceration found in the knee at necropsy. Besides the persisting erysipelatous affection, there were numerous acutely developing small spots and purpura with streptococcus emboli.

105. **Tuberculin Treatment of Dispensary Patients.**—Hartmann has been much impressed with the good results obtained with minute doses of tuberculin at the tuberculosis dispensary in his charge. He makes the injection between the shoulder blades, starting with 0.000005 c.c., and has the patient go home and stay in bed for the rest of the day, and if there is fever until the temperature is normal. The excellent results are particularly striking, he says, as the patients are poor and their surroundings are often far from favorable for recovery from their tuberculosis.

106. **Death after Salvarsan.**—Krol's case differs from the usual type of post-salvarsan fatalities. There was no evidence of hemorrhagic encephalitis and no sign of trouble for two weeks. No mercury had been taken at any time. The patient was a tabetic man of 59 with six healthy children. The salvarsan was given mainly to relieve the severe pains in the limbs, which it promptly did each time. As the pains were relieved by the salvarsan and as it seemed to keep the tabes stationary and as the patient pleaded for the injections, he was given seven intravenous injections of the salvarsan in the course of two years. Two weeks after the last injection extensive necrosis developed in the left rectus muscle and the man succumbed in coma in three days. The interval since the last preceding injection was over a year. The dose was 0.6/200 c.c.

107. **Protection of the Hands.**—Brüning has found that smearing the hands with petrolatum, after they have been scrubbed, rinsed in alcohol and dried, will protect against germs. The microbes are caught in the petrolatum and when the hands are washed in hot water the germs are washed off with it. He uses petrolatum medicated with boric acid, and states that extensive tests have confirmed the efficacy of this simple protection which he regards as a more certain protection than rubber gloves, as gloves are so liable to tear.

Therapie der Gegenwart, Berlin

August, LIV, No. 8, pp. 337-384

108 *Treatment of Syphilis. (Wann müssen wir Syphilitiker behandeln?) H. Schottmüller.

109 Treatment of Stomach Disease. (Fortschritte in der Behandlung der Magenkrankheiten.) G. Klemperer. Commenced in No. 7.

110 *Exophthalmic Goiter. (Diagnostische und therapeutische Bemerkungen zur Basedowschen Krankheit.) J. Hallervorden. Commenced in No. 7.

108. **Treatment of Syphilis.**—Schottmüller comments on the prevalence of syphilis, citing the experience of a number of German clinicians; in his own internal disease service at Hamburg 18.6 per cent. of 1,014 hospital patients were syphilities, and 40 per cent. of all his patients with heart disease. Oberndorfer found signs of syphilitic disease of the aorta in 7 per cent. of all the cadavers he has examined (Munich). Deneke encountered 200 cases of aortitis in four years, and a syphilitic origin was unmistakable in 80 per cent. of the total. Lenz estimates that 10 per cent. of all the men in the large cities have syphilis. He found syphilitic aortitis in 52 per cent. of all his syphilitic male patients over 30, and Stadler has reported a still higher proportion, 82 per cent.

According to the general experience, Schottmüller says, the really dangerous period, as far as the vascular system is concerned, is the second decade after infection. Aortitis may develop in three or four years but as a rule it does not become manifest until ten years or more have elapsed. It may retrogress; Oberndorfer has encountered instances of apparently healed aortitis in syphilities, but they are the rare exceptions, and the shriveling that results from the healing process is liable to entail serious clinical consequences as the process generally is located at the aortic valves and at the openings of the coronary arteries into the aorta. In Schottmüller's twenty-two patients, 1908-1910, the course of the aortitis was unfavorable and often fulminating, notwithstanding energetic treatment was systematically applied. Nearly all the persons with syphilitic aortitis die within one or two years after it begins to induce symptoms. But there is a long latent stage and it is during this stage that treatment must be applied to have any efficacy.

It is here, he says, in the early detection of syphilitic vascular trouble, that the Wassermann test has proved of preeminent importance. The reaction was positive in 86 per cent. of fifty-three cases of syphilitic aortitis in his service, even in the earliest stages of the vascular disease; the only negative responses were in syphilitics who had just been taking a vigorous course of treatment. He remarks that even if the progress of science enables us to abort or cure syphilis in its incipient stages, yet there will always be cases in which the infection was not recognized in its early phase, and no treatment was applied; Fournier states that fully 50 per cent. of his patients with syphilis had never been aware that they had the disease. The detection of late syphilis and its treatment will therefore always remain a task for the general practitioner, and it is to him that the infected will look to protect them against the dangers of syphilitic vascular disease and general paresis. Even the most approved and vigorous courses of treatment do not always protect against them later in life, which shows that our present methods of treating syphilis are far from perfect.

The practical conclusion Schottmüller draws from these and other arguments presented are that every person known to have syphilis should be kept under supervision and especially during the second decade should be tested with the Wassermann technic regularly two or three times every year. If the patient does not apply voluntarily to his family physician for the test each time, he must be summoned. The persons with occult syphilis, that is, who are not aware that they have ever had the disease, can be detected only when family physicians and consultants apply the Wassermann test regularly and indiscriminately as a routine measure to all. He remarks that it is simply amazing to note the frequency of positive responses when this is done indiscriminately, especially in life insurance examinations.

When a positive reaction is obtained, specific treatment should be started at once and be kept up until the test gives a negative response. When the test persists positive in spite of all our efforts, the patient can be reassured that the dangers of the tardy phase may be averted although the treatment may have failed to transform the last symptom, namely, the specific response to the biologic test. Treatment with a positive response should be along the general lines for treatment as in the secondary stage. He warns further that clinical symptoms may occur even with a negative reaction, and consequently that examination of the organs should never be neglected. The same principles of frequent repetition of the Wassermann test and treatment based on its findings should be applied when there is suspicion of an inherited syphilitic taint. He has thus obtained excellent results in a number of children of syphilitic parents; they showed no signs of syphilis, beyond the positive reaction, but specific treatment was at once applied and the children have grown up healthy. The easiest way to obtain the forty drops of blood for the test is by drawing the blood from the tip of the finger directly into the centrifuge tube.

110. **Exophthalmic Goiter.**—Hallervorden reviews his experience with 100 cases of exophthalmic goiter. He regards it as a disease of an essentially protracted course; the acute exacerbations seem to be independent morbid entities, but this is not true in fact. They are merely the flaring up into an acute phase of a long dragging affection. The acute phase subsides but leaves usually some symptoms which show the initiated that the disease has merely entered on another stage of latency. It may be roused up anew or for the first time by the mere administration of iodin or by an intercurrent infectious disease; this occurred in thirteen of his hundred cases; by a curetting or extraction of a tooth; by a course of treatment for tapeworm; by a fright or the death of some close relative (eleven cases); by prolonged worry (eighteen cases), and by overwork (ten cases). In only twenty cases the disease progressively developed to the acute phase without some known exciting cause. In no less than twenty-five cases in his experience administration of iodid was, beyond question, responsible for the onset of the acute phase. Periods of physiologic stress, such as puberty, the menopause and pregnancy, afford a special predisposition. In one of his cases the exophthalmic goiter came on apparently for the first time with the first menstruation. The symptoms were so severe that operative treatment was applied with apparently a complete cure. No further symptoms were noted until the woman reached the menopause, when the trouble flared up anew. In ten of Hallervorden's patients the first signs of the disease appeared during the menopause, and in four other cases the long latent affection flared up anew at this period. On account of the frequent nervous symptoms with exophthalmic goiter, psychotherapy should be given a prominent place in treatment. In addition to complete repose, if possible out of doors, the main reliance should be on hydrotherapy, packs and half baths, as advocated by Winternitz. The pulse generally subsided during the packs. Cooling applications were also found useful for the neck and back every day an hour at a time and a coil of tubing to apply cold to the heart when the heart showed much disturbance. Galvanization of the sympathetic nerve never did any good in his experience, nor antithyroid treatment, but arsenic medication never failed. Out of seventy-five patients treated on these principles, fifty-three were materially improved and the improvement has persisted in many for from four to eight years to date. An operation was advised in the others but some refused it and in some of the others even the operation failed to restore the balance between the glands with an internal secretion, so that the improvement did not amount to much. This group includes those with predominantly nervous phenomena and a particularly insidious course, the type which Stern calls "basedowoid." The symptoms in this form of the disease generally prove refractory to both internal and operative measures; there is usually some psychopathic element in this group. A few typical examples are described; in one case the tremor, insomnia, headache and palpitations were very pronounced but there were no sweats, no diarrhea and no appreciable changes in the neck or eyes. Partial thyroidectomy was followed by rather an aggravation of the above symptoms, and fleeting edema developed. In conclusion he

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remarks that the cases with a sudden onset with the fully developed syndrome seem to be the most amenable to surgical measures, while the incomplete forms—probably because these come only late to the surgeon—offer little prospect of relief from an operation. The prospects are not much better with internal treatment, he adds. Real permanent benefit from any treatment may be anticipated only when the disease is not of long standing.

Wiener klinische Wochenschrift, Vienna

July 31, XXVI, No. 31, pp. 1265-1296

111 Estimation of Diaphragm Functioning. (Zur Frage der Bestimmung des Zwerchfellstandes und der Zwerchfellfunktion.) C. Bjoff.
112 Sarcoma of Uterus Wall. (Zur Kasuistik der Wandsarkome des Uterus.) H. Zacherl.
113 Intra-Uterine Miliary Tuberculosis. H. Rollett.
114 Intralobar Pulsating Empyema. E. Levi.
115 Ethyl Chlorid in Dentistry. (Der Chloräthylrausch in der operativen Zahnheilkunde.) A. Kneucker.
116 Trained Nurses. (Die Fürsorgeschwester im Frieden und im Kriege.) I. v. Arit and L. Moll.

Zeitschrift für Geburtshülfe und Gynäkologie, Stuttgart

LXXIII, No. 3, pp. 631-986. Last indexed Aug. 23, p. 631

117 Extrachorial Development of the Fetus; Three Cases. J. Samuels.
118 Intraperitoneal Ventrofixation of Round Ligaments; One Hundred Cases. P. Rissmann.
119 Buried Fine Silk Sutures in Alexander-Adams Operation; Hundred Cases. P. Rissmann.
120 *The Wandering Spleen in Its Relation to the Genital Organs. (Die Wandermilz in ihren Beziehungen zur Geburtshülfe und Gynäkologie.) F. Montuoro.
121 Prognostic Significance of Streptococci in the Intra-Partum Vaginal Secretions. M. Goldstrom.
122 Primary Carcinoma in the Vagina and Leukoplakia. E. Lohnberg.
123 Study of the Electric Excitability During Pregnancy. (Die elektrische Erregbarkeit bei Schwangeren.) H. Thierry.
124 The Lipoids in the Human Uterus. K. Sugi.
125 External Female Pseudohermaphrodite. O. Küstner.
126 Obstetric Importance of Early Rupture of the Membranes. (Bedeutung des frühzeitigen Blasensprunges für Geburt und Wochenbett.) P. C. T. v. d. Hoeven.
127 Febrile Abortion. W. Benthin.

120. **Wandering Spleen in Relation to Gynecology and Obstetrics.**—Montuoro has found records of seventy-nine cases of torsion of a wandering spleen to which he adds one from his own experience, all in women. He knows of only three cases in men. In thirteen cases the spleen was removed during a pregnancy or after delivery, and all the women recovered but one who died the sixth day. On the other hand, four of the thirteen women died who required splenectomy for rupture or other injury of the spleen during a pregnancy. The greatest damage from a wandering spleen occurs when it is in direct contact with the genital organs and adhesions develop or it pushes them out of place. The pregnant uterus may compress a wandering spleen and evil result, while splenectomy during a pregnancy has a very good prognosis. The diagnosis of torsion of a wandering spleen is much facilitated if one only bears the possibility of such a lesion in mind when examining a tumor in the genital sphere.

Zeitschrift für klinische Medizin, Berlin

LXXVIII, Nos. 1-2, pp. 1-204. Last indexed July 19, p. 232

128 *Clinical Diagnosis of Primary, Secondary and Syphilitic Degenerative Disease of the Kidneys. F. Munk.
129 *Pathology of Sweat-Gland Functioning. (Anhidrosis und Diabetes Insipidus.) H. Gunther.
130 Behavior of Organic and Inorganic Bromids in the Animal Body. A. Gutknecht.
131 The Blood-Findings of Chronic Myeloid Leukemia in a Case of Subacute Miliary Tuberculosis. O. Roth.
132 The Capillary Blood-Pressure. (Zur Frage des Kapillardruckes. Klinische Untersuchungen mit dem Basterschen Ochrometer.) R. Landerer.
133 Nature of the Glandular-Filamentous Substance of the Red Blood-Corpuscle and Its Relation to the Staining Properties. W. Pfuhl.
134 Stipple Red Cells in the Bone-Marrow. (Der experimentelle Nachweis basophilpunktierter roter Blutzellen im Knochenmark.) G. Walterhöfer.
135 *Research on Chronic Pancreatitis and Chronic Jaundice. R. Ehrmann and H. Kruspe.
136 Arrest of the Respiration During Deep Inspiration. (Der Atemstillstand in tiefer Inspirationsstellung.) E. Mosler.
137 Changes in the Antibody Content of Rabbit Serums. R. Ledermann and E. Herzfeld.
138 The Pathologic Physiology of Athletics. A. Albu.
139 Degeneration of Nuclei of Leukocytes and Lymphocytes. H. Kronberger.

128. **Degenerative Changes in the Kidneys.**—Munk calls attention to the hitherto unsuspected frequency of degenerative changes in the kidneys as modifying the clinical picture. Examination of the urine sediment will suggest the possibility of this: Fat drops and fatty casts in the urine are a sign of fatty degeneration of organs in various forms of cachexia, anemia and diabetes, and are thus important for the prognosis. They may also suggest amyloid degeneration as in severe tuberculosis. Droplets of fat may also indicate the degree of destruction of kidney parenchyma in an acute nephritis. Highly refractile lipoids in the urine sediment, as examined with the polarization microscope, are a reliable sign of some chronic degenerative affection of the kidney and may differentiate such from an acute nephritis. Highly refractile *(Doppeltbrechende)* lipoids are found in secondary contracted kidney consecutive to acute inflammatory nephritis. Also in primary degenerative large white kidney. Also in relatively small amounts in amyloid kidney accompanied by numbers of isotropic fatty casts. Also, although very rarely, in true and arteriosclerotic contracted kidney. Acute parenchymatous syphilitic nephritis is a type of the pure lipoid-degenerative nephrosis, the large white kidney. The article is illustrated.

129. **Anhidrosis and Diabetes Insipidus.**—The man of 32 in the case reported never perspired and when the weather was very hot suffered severely from symptoms showing lack of the normal regulation and radiation of heat. Diabetes insipidus had also developed and an affection of the skin best described as a miliary angiomatosis.

135. **Chronic Pancreatitis.**—Ehrmann and Kruspe here report a second case in which their diagnosis of chronic pancreatitis was confirmed by the findings at operation. In both the cases the gall-bladder was found sound and the jaundice observed must have been due to compression of the bile duct by the swollen head of the pancreas. They reiterate that examination of the stools is indispensable for the diagnosis of chronic pancreatitis; meat and fat are passed undigested and the patient loses weight rapidly on account of the defective utilization of the nourishment ingested. Pressure on the duodenum may cause retention in the stomach. In one of the cases described this occurred in addition to the jaundice from pressure on the bile duct. One of the patients had colic pains in the upper abdomen; the other never had pain. With stasis in the pancreas the diastatic ferment is absorbed and appears in the urine while the diastatic and tryptic ferments disappear from the stools. The metabolic findings in the two cases are given in detail and also in a case of chronic occlusion of the bile duct but no pancreatitis. The cholecystenterotomy answered the desired purpose in each case. It is important after the operation to regulate the diet to permit only foods which do not require the pancreatic ferments for their digestion and assimilation, thus avoiding meat and fat and partaking abundantly of starchy foods, with possibly the addition of some animal pancreas preparation or vegetable ferment.

Zeitschrift für Urologie, Berlin

August, VII, No. 8, pp. 615-704

140 *Atrophy of the Prostate; Four Cases. V. Caesar.
141 *Improved Technic for Direct Inspection of the Ureters. (Ein neues Ureterenkystoskop mit Vorrichtung zum leichten Auswechseln der Katheter, zugleich ein Beitrag zur Asepsis des Harnleiterkatheterismus.) J. Vogel.
142 Case of Acute Retention of Urine with Imperforate Hymen in Girl of 15; Secondary Fatal Peritonitis. (Fall von akuter Harnretention bei Gynatresie.) H. Lohnstein.
143 *Multiple Myoma of the Penis. F. Stavianicek.
144 Serious After-Hemorrhage Following Electric Obliteration of Papilloma in the Bladder. (Fall von starker Nachblutung nach Operation eines Blasenpapilloms mittelst Hochfrequenzströmen.) C. Schneider.

140. **Atrophy of the Prostate.**—Caesar reports three operative cases of atrophy of the prostate and the post-mortem findings in a fourth case, the patient a tabetic. In this case

the prostate had actually shriveled entirely away; there was merely a thin pocket-like fold of mucosa, lying like a valve over the outlet of the bladder. The bladder was much dilated and the walls atrophied and thin. In two of the four cases there was a history of gonorrhea; in the others the origin of the trouble was obscure but there had evidently been a phase of inflammation at some time. In one case the operation put an end to all trouble; in the others great improvement followed, so that his experience confirms the advantages of operative relief. Casper has stated that there is no residual urine with atrophy of the prostate, mentioning this as an aid in differentiation, but in Caesar's cases this did not apply, there was up to 1,200 c.c. in one, 1,000 in another and 600 c.c. in the third. Differentiation is difficult; it is important to examine the patient as he stands and again in the lithotomy and again in the knee-elbow position, as the palpation findings are so misleading. When practicable he advises to palpate over a hard catheter, or, with both hands, through the rectum and abdomen simultaneously. It is astonishing, he remarks, how folds of mucosa in the chronically inflamed bladder will simulate an enlarged lateral prostate lobe. He endorses Barth's suggestion that during every operation on the prostate careful search should be made for evidence as to the share of gonorrhea in indurative prostatitis and the share of the latter in atrophy of the prostate in later life.

141. **Catheterization of the Ureters.**—Vogel mentions among other suggestions for improved technic that he has found very useful a long linen bag, about 2 cm. wide, in which he keeps the catheter and sterilizes the whole together. The bag is longer than the catheter and the open end projects beyond the tip of the catheter and is tied around with a tape. When the catheter is to be introduced into the cystoscope the tape is untied, the catheter pushed through into the passage in the cystoscope, the bag still covering the exposed part and held tight on it by a spring clip through which the catheter can be pushed farther in without trouble. By this means all direct handling of the catheter itself is avoided.

143. **Multiple Myoma of the Penis.**—A radical operation was done as the diagnosis of cancer seemed certain on account of the extent of the process. But the trouble proved to be merely a benign collection of myomas scattered through the organ and a less mutilating operation might have answered the purpose. If a scrap had been excised beforehand for microscopic examination, a less mutilating operation might have been done.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 12, XXXIV, No. 96, pp. 999-1006

145 Autoserotherapy in Pleurisy with Effusion. (Le iniezioni di autosiero ed i leucociti nelle pleuriti essudative.) N. Barbaro.

Policlinico, Rome

August 10, XX, No. 32, pp. 1153-1176

146 Persistence of Typhoid Bacilli in the Stools after Recovery from Typhoid. (Osservazioni sulla permanenza del B. del tifo nelle deiezioni di convalescenti e guariti di infezione tifica.) C. Campiglio.

147 *Recurrence of Gastric Ulcer Soon After Gastro-Enterostomy; Four Cases. (Sui resultati della terapia chirurgica dell' ulcera dello stomaco.) P. Filadoro.

147. **Recurrence after Gastro-Enterostomy for Gastric Ulcer.**—One of the four patients whose cases are described succumbed to peritonitis from the recurring ulcer. One refused a second operation. In the third the new opening was found entirely obstructed, and in the fourth adhesions interfered with the functioning of the new opening and there were no further symptoms for a time after the adhesions had been broken up. But the cure even in this case was not permanent.

Riforma Medica, Naples

August 2, XXIX, No. 31, pp. 845-868

148 The Meningeal Reactions in Chronic Lead-Poisoning. P. Boveri.

149 Trypanosomes in the Peripheral Blood. (Sul reperto del parassita di Leishman nel sangue periferico.) S. Cannata.

150 Compound Dislocation of Finger or Toe; Three Cases. (Su tre casi di lussazione complicata.) A. Albalque.

Nordiskt medicinskt Arkiv, Stockholm

XLV, Medical Section No. 4, Last indexed June 7, p. 1844

151 Action and Two Types of Elimination of Iodin in the Body (Studier öfver jodverkan.) C. J. Enebuske. Commenced in No. 3.

*152 *Action of Salvarsan on the Kidneys. (Salvarsanets inverkan på njurarna vid intravenösa injektioner.) H. I. Schlasberg

153 Malaria and Causes of Its Almost Complete Extinction in Sweden. C. Flensburg.

*154 *Injurious Effect on the Heart of Competitive Athletics. (Die chronischen Anstrengungsveränderungen des Herzens.) R. Beck (Vienna).

152. **Injurious Action of Salvarsan on the Kidneys.**—Schlasberg summarizes twenty-seven cases in which administration of salvarsan was followed by the appearance of tube-casts in the urine, showing that the arsenic eliminated through the kidneys after intravenous injection of the salvarsan caused irritation on its way through these organs. He examined the urine of eighty patients systematically. In most cases the tube-casts were manifest in the urine the day after the intravenous injection; only in a few instances not until a day later. Reexamination two months later showed no signs of tube-casts. When mercury was being given with the salvarsan, the urine contained more tube-casts than otherwise. Experiments on nine rabbits confirmed this deleterious action of salvarsan on the kidneys; it affects principally the epithelium of the convoluted tubules. There is liable to be albuminuria at the same time; this subsides sooner than the tube-casts.

154. **Danger to the Heart in Competitive Athletics.**—Beck insists that all forms of extreme physical effort, all competitive sporting events, rowing, running, swimming, bicycling, etc., for prizes are injurious for the heart. They should be unconditionally done away with as they wreak destruction on the heart of the young. Rationally managed sports, on the other hand, are a great blessing and benefit for our generation.

Norsk Magazin for Lægevidenskaben, Christiania

August, LXXIV, No. 8, pp. 1025-1160

155 Research on Pathogenic Fungi; Especially the Actinomyces. (Strallesoppen fra Toten—Straalesoppens opholdssted og mugfrugt.) O. Sopp.

156 *Primary Actinomycosis of the Skin. W. Holland.

157 Scarlet Fever without Exanthem or Desquamation. O. Lorange.

158 Heredity and Psychiatry. J. Henrichs.

159 Spontaneous Fracture of the Scapula. (Et tilfælde av spontanfraktur av skulderbladet.) N. B. Grøndahl.

160 Fracture of Vertebrae in Ski Jumping. (Kompressionsfraktur av hvirvelsøilen ved skiløpning. N. B. Grøndahl.

156. **Primary Actinomycosis of the Skin.**—Holland adds a third to the two cases previously published in Norway of primary invasion of the skin by the actinomyces. His patient was a man of 62, boarded out in the country as a mildly insane ward of the state. He was physically healthy until a superficial process developed on the chest and gradually spread, the man dying of debility the eighth month. Microscopic findings were negative at first, and guinea-pigs inoculated showed no signs of disease. This excluded tuberculosis, and the assumption of actinomycosis was later confirmed by the microscope and again at necropsy. The peculiar odor of the pus, a pungent nauseating odor, was characteristic, as also the tenacious gluey consistency of the discharge from the abscesses. No cattle in the neighborhood were known to have been sick for a long time. Perhaps the most peculiar feature of actinomycotic lesions is the lack of involvement or invasion of the lymph vessels and nodes. There are no phenomena on the part of the lymphatic system, no enlarged nodes in the vicinity, and no spreading through the lymphatics even when the infection has lasted a long time. Holland has examined the records of over a thousand cases of actinomycosis and found forty-five in which the actinomycosis developed in direct connection with some injury or at the site of an injury. Comparison of these cases shows that the lesion is of pronounced local character and that the incubation may be only a few days in length. In some cases there was an interval of only eight days; the longest interval in this material was six weeks.

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